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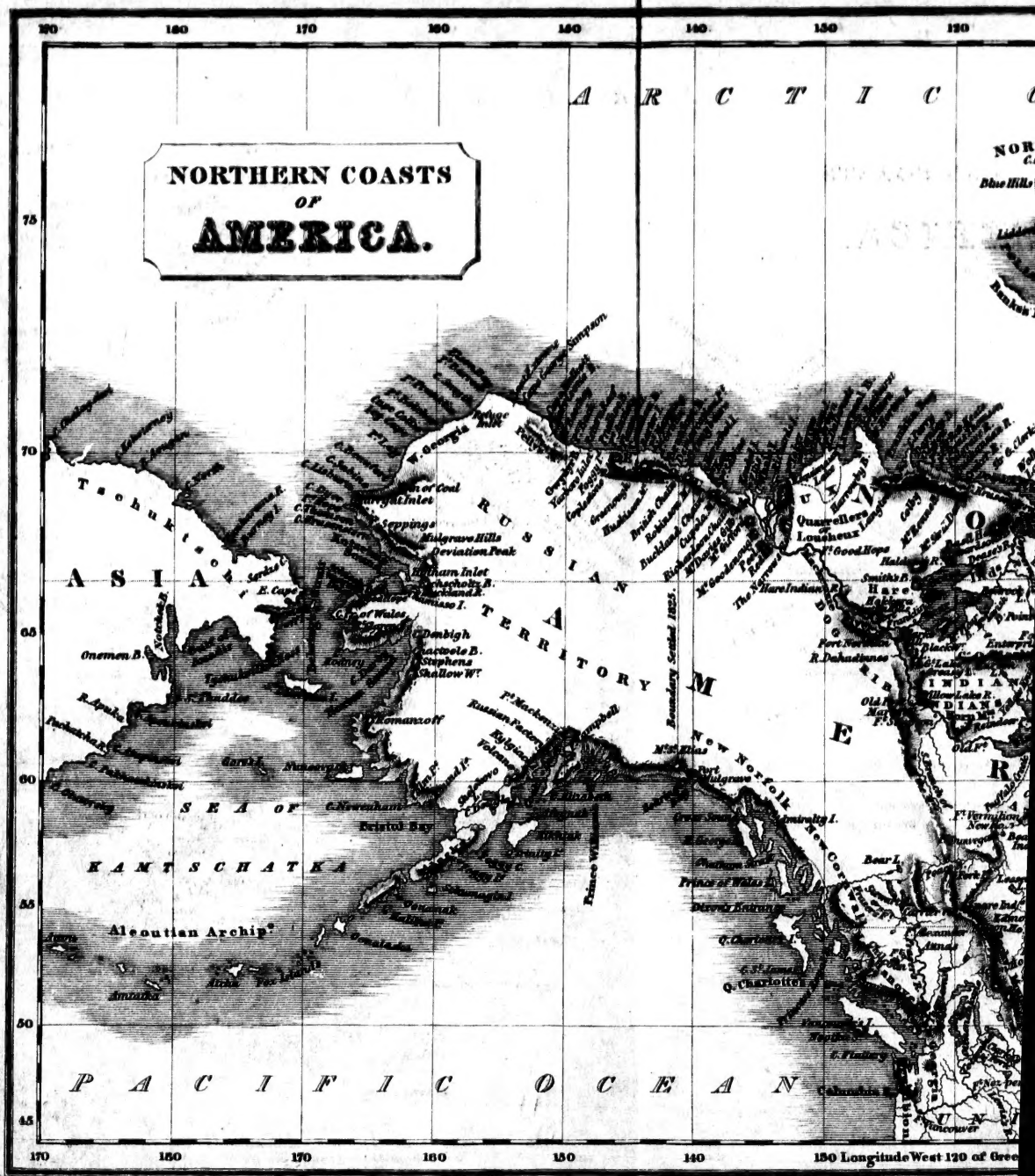
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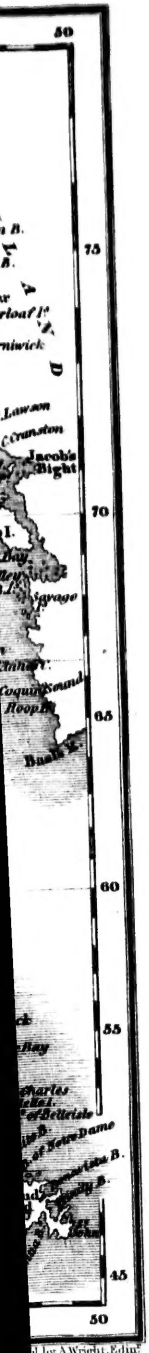

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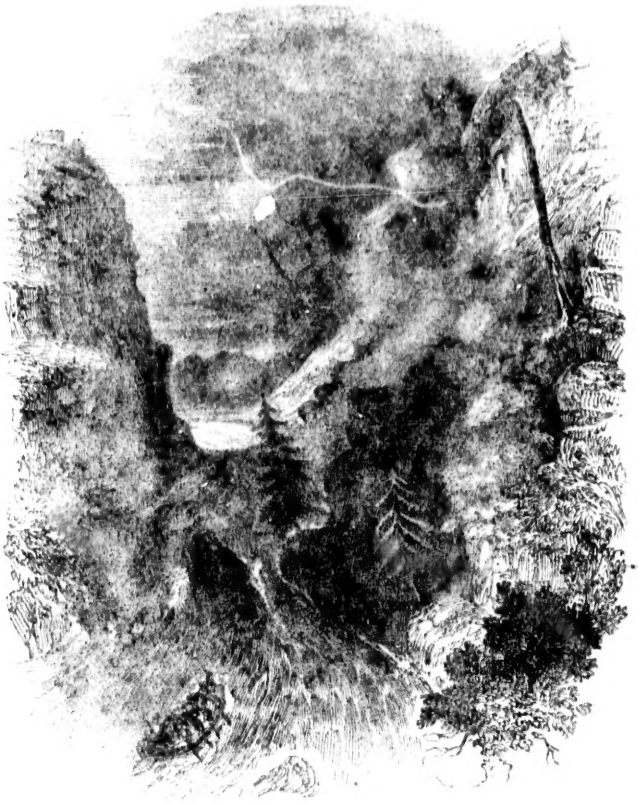

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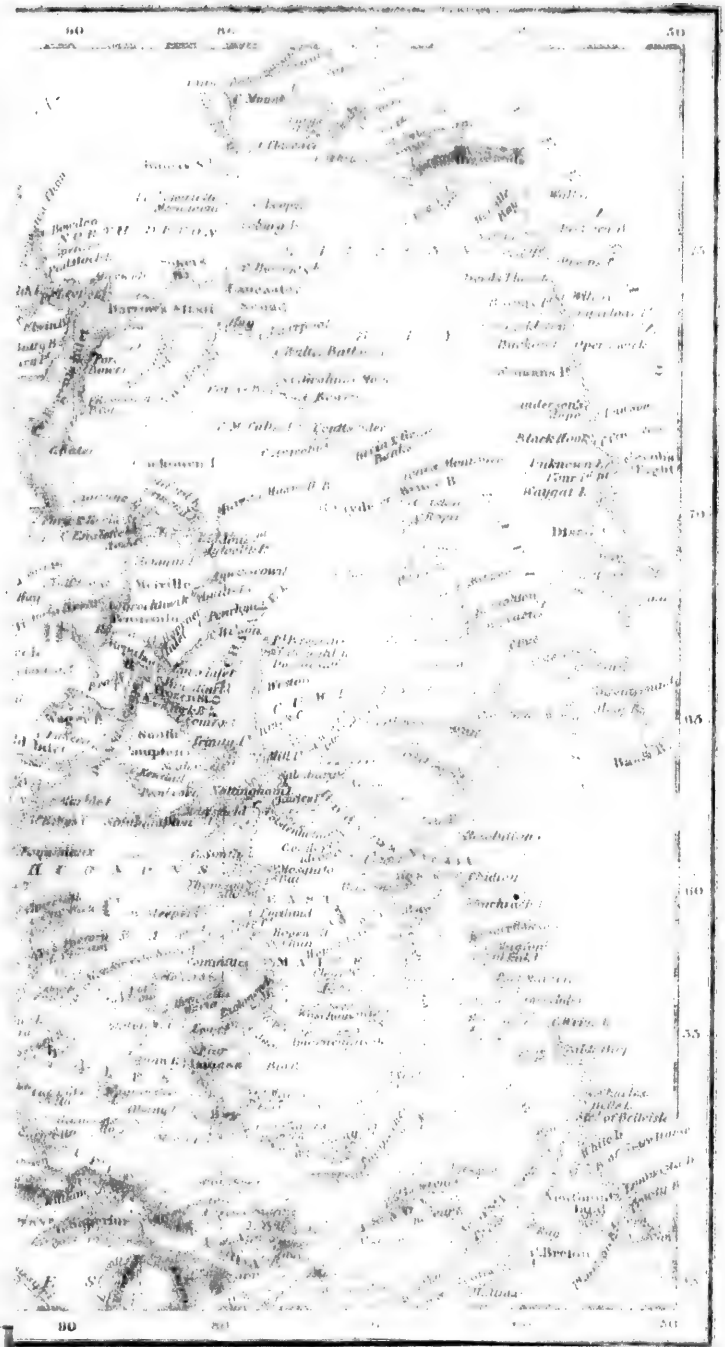
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BRITISH AMERICA.

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Hudson's Bay Territory: Early Discovery and Settlement.

Outline and Boundaries—Mountain Ranges—Rivers and Lakes—Discovery by Cabot and Hudson—Button—Bylot—Fox—James—Hudson's Bay Company—Their Settlements—Contests with France—Voyages by Knight—Middleton—Moor and Smith—North-west Company—Harmon's Account of their Trade and Settlements.

THERE still remains to be described a region of British America, far surpassing in extent the settled and occupied parts. It stretches in length from the eastern coast, in about 65° W. long., to the Russian boundary, in 141°, being seventy-six degrees of longitude, which, in the sixtieth degree of latitude, will make about 2600 miles. The breadth, from 49° north latitude, the boundary of the United States, reaches to the northern limit of America. The dimension, in this direction, will therefore be twenty-one degrees, or nearly 1460 English miles; but so much space is occupied by inland seas, that it is scarcely possible to estimate its superficial extent.

In former volumes of the Cabinet Library, which illustrate the career of discovery in the Arctic regions and on the coasts of America, there will be found described particular portions of this vast and in many respects interesting territory. It now remains to exhibit a complete and connected view of it, adding a fuller account of those geographical and historical details which before could only be slightly noticed.

The most important natural division of this wide territory is formed by a highland range, commencing at the Atlantic, and running towards the west between the Canadas and the Hudson's Bay possessions. Although it rises from 1500 to 2000 feet above the sea-level, it by no means presents a mountainous or even hilly appearance. The sides slope upwards in a very gradual manner, usually terminating on the summit in an extensive marshy plain; and it is only when they border on rivers and lakes, particularly the northern shores of Huron and Superior, that broken and rocky cliffs are exhibited. After forming the upper margin of these great lakes, it follows a winding line, generally north-west, passing northward of the source of the Mississippi, and east of Lake Winnipeg. Finally, taking a direction almost due north, it divides the waters which fall into the Arctic Ocean from those which flow into Hudson's Bay. It is here reckoned about 2500 feet high, and displays on the western side a very steep precipice. The lofty chain of the Rocky Mountains, running north and south, separates the main body of this territory from that on the west, bounded on the other side by the Pacific.

This region, in general, may be divided into three portions, strikingly distinct in surface and aspect. The first is the prairie country, on its southern limit, from Canada westward to the Rocky Mountains, and intersected by the boundary of the United States. It is traversed by streams of long course, which roll sluggishly over its flat surface; and their banks, for a considerable space, being frequently overflowed, are alluvial, covered with rich herbage, and capable of high cultivation. At a

distance from the water, the soil becomes thin and steril, and timber extremely scarce, so that even the natives have not erected any fixed habitations. The country, however, will doubtless one day support a numerous population; but at present, with the exception of the settlement on the Red River, it is only tenanted by tribes of fierce and independent savages. The game consists chiefly of buffaloes, which roam in vast herds over the wide open plains. The wolf, the lynx, the fox, and various kinds of deer, likewise inhabit it; but the beaver and martin, the most valuable species, do not find here their appropriate food.

Another and much more extensive division consists of the wooded countries, extending around Hudson's Bay, westward to the Rocky Mountains, and northward to the Arctic Ocean. The severity of the climate precludes the prospect of their ever becoming the seat of much improvement; the trees being mostly of the pine species, and towards the northern boundary of a very stunted growth. All these tracts, however, abound with animals yielding those rich furs which form at present the only exportable produce of this part of America.

The western territory, between the Rocky Mountains and the ocean, is much less extensive, generally steep and rugged in the vicinity of the first great barrier, but more level as it approaches the sea. The climate from April to October is delightfully temperate; but during the rest of the year it is rainy, though frost or snow seldom occurs. Many tracts are fitted for yielding in abundance whatever can minister to the use of civilized man. The furred animals are found in great numbers and of the same species, though, from the mildness of the climate, of somewhat inferior quality to those of the wooded countries. The ocean, however, yields one not elsewhere known, the sea otter, clothed in a skin of extreme richness, for which there is a regular demand in the Chinese market.

These regions are traversed by some large streams. The Peace River, which rises in the Rocky Mountains, flows

first in a westerly direction, and then, after receiving the Athabasca or Elk, falls into the Great Slave Lake. Thence it issues under the name of the Mackenzie, and proceeds northwards on the eastern side of the dividing ridge, till, after a run of not less than 2000 miles, it disappears in the Arctic Ocean. The Saskatchawan, from the same chain, holds a long course through the prairie countries, while the Assiniboine rises in that territory, and both pour themselves into Lake Winnipeg. The surplus waters of that great expanse are conveyed into Hudson's Bay by the Severn, which on this account is considered a continuation of those rivers. From the eastern side of the ridge, the Churchill or Missinnippi, and the Nelson, flow into the bay; while the Coppermine River rolls north, through a naked and rocky tract, and the Thlew-ee-choh north-east, through a chain of large lakes, both into the Northern Ocean. The western district contains the great river Columbia, navigable 1200 miles from its mouth; also the Fraser, flowing from the same declivity into the Pacific, and each receiving numerous tributaries. Through the wooded countries, in an oblique line from south-east to north-west, extends the chain of great lakes, Winnipeg, Athabasca, Slave, and Great Bear. To these may be added, though on a smaller scale, Clinton-Colden, Aylmer, and Garry, near the course of the Thlew-ee-choh. Most of these natural features will be found described by Mr Tytler, in his "Discovery on the more Northern Coasts of America," or in subsequent parts of this chapter.

Hudson's Bay was repeatedly visited, at an early period, by English navigators. though for a long time solely with a view to that great object of discovering a north-west passage. It appears that Sebastian Cabot, in 1517, first penetrated to this gulf, but did not view it as an enclosed sea, being convinced, that if the commander, Sir Thomas Pert, had persevered, he might have reached the coast of India or China. This voyage, however, was lost sight of; so that when Hudson in 1610 sailed through the straits now bearing his name, and found a

wide open expanse, it was considered a new discovery, and named from him *Fretum Hudson*, "the Hudson Sea." Nor was it yet recognised as a bay, but was viewed with hope as part of the Pacific, and leading directly to the eastern coasts of Asia. The navigator, however, having been compelled to winter within the straits, where the crew were exposed to severe suffering, a violent mutiny arose among them, when he and several of his adherents were exposed in a little boat on this inhospitable shore, and doubtless perished. Only a few of the sailors, after enduring many calamities, made their way home, covered with a dark cloud of suspicion of having been at least passive instruments in the crime to which their leader fell a victim.*

Notwithstanding the disastrous issue of this expedition, it had opened vast prospects, to which as yet there appeared no limit. The long and intricate strait had seemed to expand, not into a bay, but an ocean; and as the fatal winter had been passed on the eastern shore, no opposite boundary had yet been traced. Under these encouraging views, Sir Thomas Button in 1612 was sent out with two vessels, having as guides Bylot and Abacuk Pricket, both companions of Hudson. No regular or official narrative of his voyage was ever published, being withheld, as Fox suspects, for some sinister purpose. Briggs says he applied to Sir Thomas for his journals, and was promised a perusal of them, but was disappointed in consequence of his going to the Continent. Fox, however, got possession of those drawn up by other officers in the vessel, which afford some idea of the leading incidents. Having sailed in May, Button arrived in a few weeks off Cape Farewell, where he was detained some time by ice. He extricated himself, and entering Hudson's Strait, penetrated to Digges' Island, where he spent eight days in putting up a pinnace, which he had brought out in frame. Here a party land-

* See a fuller narrative in Polar Seas and Regions, chapter vi.

ed and began to collect a species of birds called by them willocks, which were found in numbers sufficient to have laden a boat; but being attacked by seventy or eighty savages in two large canoes, they found it necessary to fire a musket, by which one was killed, when the others, amazed at the report and execution, took to flight. Soon after, however, a number of seamen having landed to procure water, the natives rushed from an ambush, and completely surprised them. Five were put to death, and one escaped by his dexterity in swimming; but it is manifest that just ground of provocation had been given, the English having taken four of their boats, and returned only two. Sir Thomas, leaving this shore, applied himself to the object of his voyage, and having passed a lofty cape in 64° 10′, beyond which an open sea appeared, he named it Hope's Advance. After some time land appeared on his right, which he called Carey's Swan's Nest, being part of Southampton Island; but it opposed no obstacle to his progress. He held on, full of sanguine hopes, till there appeared before him, in 60° 10′, a long line of coast, running north and south, and barring further advance. Struck with dismay, he gave it the gloomy name of Hope Checked; and soon a severe storm, with the advancing season, left only time to consider how he might find winter quarters. After ranging southerly for a considerable space, he came to the mouth of a broad river, which he named Nelson, and where the Company have established their principal factory. The ship was prepared as well as possible to pass the dreary months; being barricaded by large piles of fir trees and earth. The crew do not appear to have suffered seriously from hunger, having killed a species of bird which they call white partridges, in numbers amounting by report to 1800 dozen. Nor was the river completely frozen over till the 16th February, being preserved open by occasional "warm and thawing days." Three large fires were kept constantly on board of the vessel; yet the sufferings of the men from cold were most intense, and a considerable

number of them died, among whom the master was one. The water did not begin to open till the 21st April.*

As soon as the ship was free from the ice, a question arose how they should best promote the objects of the voyage. One Hubbart advised to penetrate up the river, and see how it was inhabited; but this evidently could contribute nothing to the main design. Another, therefore, proposed to proceed southward till they should find, as he expected, a tide flowing from the westward; then "to bend their courses against that flood." It was finally decided to seek a passage between the newly-discovered western shore and the land to which they had given the name of Carey's Swan's Nest. They proceeded, therefore, through the wide opening since called Sir Thomas Roe's Welcome; but pursuing an east and north-east course, instead of keeping in the mid channel, they soon lighted upon Southampton Island, and were much troubled to see the land "troul away southerly," apprehending that the sea in which they sailed was nothing more than a bay. The writer of the notes, however, who seems to be Sir Thomas Roe, says, "I cannot find this proved, nor is it by any thing herein written, and for other things known." Button, in fact, attempted to clear this barrier, and get again into the open sea; but after sailing some space, he came in view of another shore following exactly the same direction. Then, it is said, he became assured of what before he only doubted; that this coast joined the western one which he had quitted, and that the Welcome was enclosed by land on all but the southern side; still, says the writer, "I do otherwise believe." It was in truth a premature conclusion; but the commander having decidedly adopted it, thought only of returning to England, which he reached in the autumn of 1613.†

In the following year an expedition was sent out un-

* North-west Fox, or Fox from the North-west Passage (4to, London, 1635), pp. 118, 119.

† Ibid. pp. 120, 126, 128.

der Captain Gibbons, who had accompanied Button ; but having suffered himself to be entangled by ice in a bay on the coast of Labrador, he did not even enter the straits, and returned without effecting any thing whatever.

The adventurers at home,—Digges, Wolstenholme, and Jones,—did not allow themselves to be discouraged. In 1615, they despatched the Discovery under the command of Bileth or Bylot, who, as a seaman, had distinguished himself in the three preceding voyages. He was accompanied by Baffin, a very skilful mariner, on whom devolved the task of relating the incidents ; but, being in this respect somewhat unlearned, he has not executed the task quite so well as could be wished. They sailed in April, and on the 6th May saw the coast of Greenland, in the vicinity of which numerous mountains of ice were tossing. One was 140 fathoms above water, and the portion beneath was supposed by some to be seven times larger. Soon after, they descried the main body of the ice, which Baffin advised to sail round ; but the captain thought if they pushed into the middle, it would gradually dissolve and give way before them. The consequence was, that in the evening they were fast amongst it, thirty leagues from any shore. They remained thus impeded till the 23d, during which time Bylot had determined to spend twenty days or upwards in examining Davis' Strait ; but, on finding himself clear of "the thick ice," he resumed his intention of proceeding to Hudson's Bay. On the 27th they saw a promontory, which proved to be Resolution Island, and two days afterwards were fairly within the straits. Making their way as they best could, they discovered land, or rather "a company of islands." Casting anchor near one, they saw a multitude of dogs strangely howling and barking ; and a party approaching the shore in a boat observed also tents and canoes, but "people they saw none." Baffin then landed and mounted a hill, whence he descried a canoe with fourteen men, to whom he made signs of friendship. These were returned, yet so as to show them "fearful of

us, while we were not willing to trust them." A mode of exchange was devised, such as has been reported of the earliest traffickers. The English left within their reach some knives, beads, and other trifles; then withdrew, and on their return found a supply of whale-fins and seal-skins, which they carried off. There were five tents covered with seal-skin, and thirty-five or forty dogs "of a brinded black colour, looking almost like wolves." They were yoked to sledges, as practised by the Greenlanders, whom this people greatly resembled in their houses and clothes, but "both less neat and artificial; their manners also more rude and uncivil." On the 19th June they were again enclosed with ice, yet the weather as fine as possible, and the water so smooth that they could make observations for the longitude as steadily on shipboard as on shore. Being liberated on the 27th, they pushed forward and came to Salisbury Island, and thence to another, or rather a group, which they named Mill, from the violent and continual grinding of the ice. Strong currents ran between the shores, and the water drawing the ship one way and the ice another involved her in great danger, to avoid which they were obliged to make a circuit. Continuing to press westward, though in the face of opposing winds, they missed Nottingham Island; but on the 11th July came in view of land, being the eastern coast of Southampton Island. One cape bore so promising an appearance, while the weather had become highly favourable, that they gave it the name of Comfort; but this sentiment was soon "quailed," when, on endeavouring to find a passage on the farther side, they saw the coast stretching to the east and north-east, leading to the impression that this was merely a bay. Bylot concluded, therefore, that his mission was ended, and thought only of returning. In repassing the Straits, he came to the spot on Digges' Island repeatedly noted for the immense number of the birds called willocks; and he observes in fact that he might have taken many thousands.*

* North-west Fox, p. 137-149. Purchas, vol. iii. p. 836-842.

Bylot returned with the decided belief that no passage westward was to be hoped for within Hudson's Bay. The zeal of the adventurers, however, not being in any degree cooled, he and Baffin were equipped next year to attempt one by Davis' Strait. On this voyage, which does not relate to our subject,* they discovered a large circuit of coast before unknown, but received the fullest impression that the wide sea round which they had sailed was only a bay, to which the name of Baffin has ever since been attached. The discouraging accounts brought home by this expedition chilled for a considerable time the disposition for maritime adventure.

This spirit, however, as long as any hope remained, failed not from time to time to revive. On deliberately considering the subject, it appeared evident that Hudson's Bay was very far from being completely explored, and that space still remained in which there might be a wide passage westward. Luke Fox, an enterprising mariner, with some pretensions to wit and letters, describes himself as the prime mover in this new enterprise. He declares that he had not been importuned to it either by noble or gentle, "but had been itching after it ever since 1608," when he applied to go in capacity of mate to John Knight. He was rejected as unqualified, and owns that "his ambition had then soared a pitch higher than his ability," but he studiously improved himself by voyages to different parts of Europe. He also sought acquaintance with the officers who returned from the western expeditions, carefully examining them as to all that had been done and was to do. Having gained much information from Thomas Sterne, globe-maker, through whose hands passed all the narratives and maps brought home by the successive navigators, he then formed his plan and communicated it to Mr Briggs, the celebrated mathematician, who warmly encouraged him, but unfortunately died before the completion of the arrangements. Sir John Brooke, however, invited him

* See Polar Seas and Regions.

to his table, supplied him with money, and finally introduced him to the king, for whose aid a petition was presented. It was seconded by Sir Thomas Roe, just returned from a Swedish embassy. His majesty cordially consented, and having sent for Sir John Wolstenholme, "this voyage's never-failing friend," appointed him to make the arrangements. Fox, receiving the choice of any ship in the public service, selected one of eighty tons, and collected a crew of twenty men, none above thirty years old, "of godly conversation," and who had been out already "on these frost-biting voyages." Two "beardless younkers" were added for steering the boat; and the vessel was completely equipped and provisioned for eighteen months. In the instructions it was ordained that daily prayers should be read; that no profane expressions should be uttered, nor any disrespectful to the sovereign; "that no man speak any doubtful or dispiriting words against the good success of the voyage, or make any doubt thereof, or make any question of the skill or knowledge of either superior or inferior officer—also, there shall be no grumbling about victuals."*

The merchants of Bristol in the same season fitted out a vessel, of which they gave the command to Captain James. It was rather in rivalry of the London one than in concert with it; and hence the king, though he afforded his countenance, contributed no funds.

Fox sailed on the 5th May 1631, taking the route of the Orkneys, which he passed on the 16th. On the 13th June, he was in the latitude of Cape Farewell, which was hidden by a dense fog. On the 21st, when off Cape Warwick, in Lumley's Inlet, he was beset, and his progress arrested by ice and currents. Some advised to seek a harbour; but he spiritedly resolved to "ply the ice in sea-room," remembering Gibbons, and because in the open water he could day and night snatch any opportunity of proceeding, which in port he could not. When beset by fog and night together, he made himself

* North-west Fox, pp. 169-172, 204.

fast to a piece of ice. Next day the sun had mounted ten degrees before it could peep through the mist; then they had a fair calm hot day, yet were still enclosed. A strong gale having afterwards risen, an iceberg proved advantageous as a drag to moderate their speed. He says, "this prodigious thing we call ice is sometimes mountains high;" but here there were no pieces larger than a great church; while most of them were not more than ten feet above, and one and a half under water: their extent varying from a perch to two acres: "these are they that do enclose you." On the 26th "the sun rose clear," making "a cold virgin day;" but in the evening the exhalations became so thick, that they could not distinguish mainland, bays, or straits, the glimmering reflection of the sun having formed the ice into varied and uncertain shapes. The bergs still lay so thick on every side, that "he knew not what wind to pray for, to quit himself of them;" but on the 30th the heat became intense, and began rapidly to dissolve these masses, which being loosened, tossed about in a dangerous manner. On the 3d July, however, an open sea appeared; "the sun licked up the fog's dew, and made a shining day," and having an almost unobstructed run, on the 10th he reached Salisbury Island, near the inner mouth of the straits. Next morning he was enclosed again, but "with haling, sailing, pulling, and towing, got clear." He was embarrassed by the compass "having almost lost its sensible part," and was absorbed in conjecture whether "the cold benumbed it as it doth us;" or whether it was acted on by minerals in the adjacent mountains. On the 17th he passed Digges' Island, and on the 21st came to Carey's Swan's Nest, but found there no swans; the shore exhibited only "strange moss, quagmires, and water plashes."*

From this point Fox's discoveries were understood to begin, and he says he had been instructed to proceed thence N.W. by N. till he reached the west coast, then diligently to search all round for a passage. On the 27th,

* North-west Fox, p. 183-200.

after some deceptions, he saw land, but which was difficult to approach from the number of rocky islands. A boat's crew landed, and found a number of dead bodies deposited in sepulchres, and covered with long wooden boards well smoothed and fitted. Fox did not attempt to search the head of the Welcome, and indeed, since the time of Button, the impression seems to have been general that it was closed all round. He steered southwards, keeping near the coast, though the islands rendered this difficult and dangerous. His survey was in vain, and on the 7th August, having reached Nelson River, he put in to refit. Having renewed two masts, and set up his pinnace, he stood out to sea; and here he met James, whose ship he oddly describes as "taking her liquor as kindly as ours, and her nose no sooner out of the pitcher than her nebe, like the duck's, was in't again." He invited his rival on board, and hospitably entertained him, though he declares he considered this the worst spent time during the voyage. James is described by him as a good mathematician, but a bad seaman, who is said to have exultingly declared he was on the way to the Emperor of Japan,—a tone with which his own narrative scarcely accords. Fox proceeded in his researches, and having passed an immense range of coast without finding a single western opening, while the direction for a long way had been almost due east, he gave up all hopes of a passage in this quarter. He determined, as the last chance, to return to Nottingham Island, at the inner mouth of the straits, and sail thence due north, instead of the western course followed by Bylot, who had thus struck upon Southampton Island. Leaving the coast, therefore, he sailed directly north-east, across the broad expanse of the bay. Its vast extent was proved by the heavy swell, and he soon encountered a sea so high and grim as "though it had in fury overthrown all lands." He was obliged to break up the pinnace, which was only a drag to his stern, the men in it being pitifully wet.*

* North-west Fox, p. 211-227.

On the 7th September, he passed Cape Pembroke, near Carey's Swan's Nest, and soon made his way into the channel sought for, and now bearing his name. He sailed along its eastern shore, and observing two conspicuous points, named one Charles' Promontory, the other Cape Maria, "in a most bounden and dutiful remembrance of my king and queen." Having passed two capes named after Lords Weston and Dorchester, he notices with emotion that he was within the Arctic circle, and soon after the latitude of 66° 47′ is announced as his "farthest." This important resolution is mentioned without any exposition of motives, or pretext of an impassable barrier. The journal for some days back had recorded that the land lay hid in snow; that the ship's sides, and the very steep-tubs were frozen; and that "most of the crew were ready to fall down with the rest, that were down already." In short, it appears that both he and his men lost courage at the idea of plunging farther into the regions of perpetual ice, and spending a winter on those inhospitable shores. It was not, he says, till they got out to the open ocean, that any genial warmth was felt, and the strength and spirits of the sailors began to revive.* At home, however, complaints seem to have been made that his conduct had in no degree answered expectation, and that having carried out the necessary supplies, he might at least have spent the winter in Hudson's Bay, and renewed the search next spring. He observes, in vindication of his proceedings, that less expense would be incurred, and the ship and people put in a more efficient state by wintering in England, and going out again next season.† But this last project does not appear to have been seriously entertained; and certainly it was never acted upon, either by himself or in any other quarter.

James meantime was pursuing his rival voyage, which was entirely fitted out by the Bristol merchants; but the king made no hesitation in giving him a letter

* North-west Fox, p. 228-243. † Ibid. pp. 250, 251.

to the Emperor of Japan, in case he should reach the shores of that monarch. Having sailed on the 2d May 1631, he was, on the 4th June, in the vicinity of Greenland, and islands of ice began to encompass him. He seems to have been fearfully appalled, and, as hinted by Fox, to have scarcely possessed either the skill or courage needful to brave those formidable obstacles. The vessel, he says, struck many fearful blows: they wrought night and day, and broke all their poles in keeping off the ice. On the 6th they were assailed by masses still more huge and extraordinary: the shallop was dashed to pieces, and the ship narrowly escaped the same fate; however, "she forced herself through, though so tossed and shattered as I think never ship was." On the 17th they imagined they heard the sound of breakers, but it proved only ice, against which the waves were dashing with a hollow and hideous noise. The fog was piercing, and froze on the sails; the compasses became useless. However, amid all these troubles, he came in view of Resolution Island, the entrance of the straits; which, it appears, were not passed without many casualties. Having struck on a rock, they thought all over, leaped on a piece of ice, and betook themselves to prayers; but as the water happily rose, their vessel was carried clear over. Their alarm was not less when, as the season advanced, the icebergs began to break with a most terrible thundering noise, and there was one, along with which they verily thought to have gone to pieces; but "God was more merciful."*

They made their way, however, through the straits, and on the 15th July were between Digges' and Nottingham Islands. After passing that of Mansfield, the allowance of bread was reduced, and they pushed eagerly for the west coast, seeking to reach it in about 63° N. latitude. Soon, however, they were arrested by dense fogs and islands of ice. The men began to murmur that they could get neither back nor forward, and doubted if

* Harris's Collection of Voyages, vol. ii. p. 407-409.

they would even find land to winter upon. These gloomy musings continued till the 5th August, when the sea became clear, a good wind sprung up, and they sailed rapidly across the bay. On the 11th, land appeared nearly in the desired position, but as James seems to have had no idea of looking northerly for the passage, he proceeded directly south. On the 13th, there was again an alarm of striking upon rocks, but "in this dreadful accident it pleased God to send two or three swelling seas, which heaved us over." On the 16th, he passed Nelson River; and on the 20th, in latitude 57°, named this country the principality of New South Wales, a title which still partly continues. On the 29th, he met Fox, and notices their intercourse, without any particulars. On the 4th and 5th September, a more dreadful storm than ever assailed them, when the ship "did labour most terribly in this distraction of winds and waves." The overwhelming sea, he says, made them feel like Jonah in the whale's belly; and their distress was "most miserable in this so unknown a place." The storm abated; but on the 12th, through the negligence of the watch, who had fallen asleep, the ship struck violently, and appeared to have received her death-wound. They hastily conveyed some tools and bread into the boat, "to prolong, for a few days, a miserable life;" however, after striking a hundred blows, in five hours she was got off. Being then assailed by another storm, they found shelter on an island.*

The question of wintering came now seriously under consideration. It was vain to think of farther attempts at a passage this season; but, ignorant how near he was to the bottom of the bay, he hoped to reach a more southern and milder climate; for here, though the latitude was only 52°, the rigging froze during the night, and it was needful each morning to shovel away half a foot thick of snow. The vessel, moreover, was so leaky, the crew so weak and unable for constant pumping, as

* Harris's Collection of Voyages, vol. ii. p. 410-414.

made it scarcely possible to steer farther through an unknown sea. On the 13th, however, they made the attempt, but were soon in such jeopardy, that "they began to prepare to make a good end of this miserable tormented life." They nevertheless succeeded in running into a sheltered sound, and after some further attempts, finally determined to take up their quarters there. The arrangements seem to have been made with judgment; and James's narrative, being the first that detailed an Arctic wintering, excited great interest, and is said to have furnished to Mr Boyle the chief materials for his "History of Cold."

They found themselves on an island, to which was given the name of Charlton. The hunters, sent round in search of provisions, found only one deer, which they had to drag twelve miles; but seeing no trace of savages, they could sleep in greater security. The victuals being examined, were found in good condition, proving the honesty of the steward, and a weekly survey was appointed. A small house, too, was erected for the sick. The ship, during a heavy gale, being nearly driven out to sea, they remembered the fate of Sir Hugh Willoughby, and determined, after taking out the provisions and stores, to sink her; an object which was effected more slowly than they wished, by boring holes with the carpenter's auger. She had previously appeared like a huge piece of ice in the form of a vessel. While engaged in this work, the men could hardly recognise each other under the icicles which covered their hair, faces, and clothes. Their noses, cheeks, and hands were as white as paper; and it became necessary to cut their hair close to prevent more serious consequences. Their sack and vinegar required to be cut like wood with a hatchet; and they had for some time been confined to melted snow-water, a drink by no means salutary, when they were lucky enough to find a spring which never froze. Meantime, strenuous exertions were made to erect a comfortable habitation. They had reared three structures, the chief of which was twenty feet square, formed of trees rudely

cut and fastened together, and covered with sails on the inside. The hearth was in the middle, and the beds ranged in a double tier round it; their spare clothes furnishing canopies and curtains. Twenty feet from this was a smaller house for cooking, and for the main body of the crew to sit in. The third was the storehouse, and being without fire, was completely buried in the drift. Thus he says they seemed to live amid a heap and wilderness of snow; however, by shovelling and beating, they contrived to form a track three feet deep, by which they could go in and out.*

On the 22d November they had lost the gunner, "an honest and strong-hearted man," who was much regretted. The others kept their health wonderfully till the end of February, when the dreadful forerunners of scurvy appeared; aching joints, loose teeth, and difficulty of eating; and two-thirds were soon under the surgeon's care. These symptoms became constantly more severe and general, yet the men were under the painful necessity of going some distance for fuel. The lumberers were sometimes obliged to crawl a mile through the snow on all-fours till they came to a tree; then to set fire to the trunk before they could cut it down, and afterwards drag it to the house. In going to the ship the cold was found still more intolerable. The surgeon, who was "a sweet-conditioned man," every morning cleared their teeth, picked the putrid flesh from the gums, bathed their benumbed limbs in water boiled with plants; after which they could endure the fatigue and exposure, though they returned as ill as ever. Thus, however, "they went through their miseries." Their house was hung with icicles, the clothes and beds were covered with hoarfrost; the cook's tubs during the night were frozen to the bottom; and when one side was warm, the ice on the other was an inch thick. The smoke from the green wood was often intolerable, and made them look like chimney-sweepers.

* Harris's Collection of Voyages, vol. ii. p. 414-420.

In January the sea was completely frozen over. As one reason of the intense cold which was here experienced he mentions the number of shallow bays in which the ice is early formed, then broken and floated out into the main, where the pieces collect and accumulate over each other, till it gets the entire predominance. On the 6th of April the snow fell deeper than at any other time of the year, and was also moist and in large flakes, instead of being as formerly like dry dust. On the 19th the master and two men preferred to sleep on board, rather than "to hear the miserable groans and lamentations of the sick all night long." About the middle of this month, though the frost was scarcely at all abated, and only five could eat their ordinary food, it became necessary to begin clearing the ship by digging the ice out of her. They celebrated May Eve when it arrived,—"choosing ladies' names, fixing them in their caps, endeavouring to revive themselves by any means." On the 18th the carpenter died, "making a very godly end," and much regretted, "both for his innate goodness, and the present necessity for a man of his quality." Soon after word was brought that the body of the late gunner was appearing above the ice; and when dug out, it was found as entire as when first committed to the water; the flesh on the bones only slipping up and down like a glove.

On clearing out the ship, they had great satisfaction on finding her completely uninjured, the ice within and around having seemingly protected her from every shock. They found also several butts of wine, beer, and cider, "which God had preserved for them." The sun becoming very powerful, rapidly dissolved the ice, which did not, however, form streams of water, but exhaled as it melted, leaving the remaining mass as it were honeycombed. Notwithstanding strict search, they could find neither herb nor leaf that was eatable till the 31st May, when some green vetches were discovered, and administered to the sick. The crop proving abundant, they were eaten in every shape, raw with bread, boiled with oil and vinegar, and the juice bruised into their liquor.

Such was the effect on the invalids, that in a few days their teeth were fastened, the flesh on the gums became firm, and those formerly unable to move could walk abroad. Yet their state was chequered by some new troubles; for while the heat during the day was intolerable, at night it froze an inch thick; and the sultry air brought forth in myriads flies of various descriptions, which he supposes to have lain dormant through the winter, with bloodthirsty mosquitoes, causing a torture which appeared to them often worse than the cold. An old flag was cut into bags to envelop their heads, yet nothing could prevent their faces from being all over pimples. As the trees, through heat, became dry like flax or hemp, a fire caught them while James and another were in the country; it ran along the ground like a train of gunpowder; and it was only by almost preternatural flight and leaps that they reached the shore.*

Meantime the aspect of the waters was carefully watched. The frozen surface began to crack with a frightful noise, and the pieces being tossed about and thrown upon each other, navigable channels were gradually formed, though the ship, no longer moored among ice, was exposed to fresh dangers. By the 18th all her holes being stopped, she was found perfectly fit for sea, and preparations were therefore made for departure. Besides the gunner and carpenter they had lost another man; not a great number under such circumstances: and they were all now decently interred. A large tree was formed into a cross, to which were fastened pictures of the king and queen doubly cased in lead, while beneath were placed the royal arms, and those of the city of Bristol. On the 1st July they took a last view of the island, got into their boat, and soon reached the ship; but finding it impossible to steer north-east across the bay, they were obliged to follow the western shore, till they came to lat. 61°, when they stood for Carey's Swan's Nest, which they reached on the 22d August.

* Harris's Collection of Voyages, vol. ii. p. 421-425.

During these six weeks, they had storms and ice continually beating on them, and were constantly as it were in the jaws of death. On arriving at Nottingham Island, James determined to make another attempt at discovery in the open sea to the north-west; and though the men showed themselves strongly indisposed, they at last consented. The frost, however, had become so intense, that ice was formed two feet thick, and did not melt under the strongest influence of the sun. There also appeared reason to apprehend that they might not be able to pass the straits, but be obliged to spend another winter, for which they were wholly unprovided. The captain therefore called a meeting of the master and men, and with a sorrowful heart, as he declares, but with their unanimous approbation, determined to return. On the 3d September he reached Resolution Island; by the 8th he was clear of the straits, after which no more ice was seen; and he steered direct for England.*

Although these voyages were all abortive as to their primary object, they laid open the great extent of Hudson's Bay, and conveyed some idea of the valuable furred animals by which its shores are tenanted. Yet so exclusively were the English intent on the India passage, that it was reserved for a rival nation to discover the benefits which might be derived from establishing a colony. A Frenchman named Grosseliez, having penetrated thither from Canada, made a survey of the country, and laid before his court the plan of a settlement. Finding it received with unmerited coldness, he procured an introduction to Mr Montague, our ambassador, and through him to Prince Rupert, whose active mind embraced the suggestion with ardour. In June 1668, the adventurers sailed in a vessel commanded by Zechariah Gillam, and reached in September a river then called Nemisco, to which they gave the name of Rupert. They wintered there, and found the frost not so intense as was expected, being nearly over in April, while, in

* Harris's Collection of Voyages, vol. ii. p. 426-430.

June, when they left it on their return, the weather had become extremely hot. Upon the report made by this party, the prince and a number of other noblemen and gentlemen subscribed a capital of £10,500, and obtained a charter, securing to them the exclusive trade and administration of all the countries round Hudson's Bay. They immediately sent out Mr Charles Bayly, who formed a settlement on Rupert's River. Others were established on Moose River in 1674, and, four years later, on the Albany. By 1685 they had added two more on the Nelson and the Severn, and in 1690 their affairs were in such a flourishing condition, that they determined to triple their original stock, thereby raising it to £31,500.*

The French court no sooner learned that the establishment so lately tendered to their acceptance had been occupied by a rival power, than they repented of their neglect; and Colbert, now at the helm of affeirs, and eagerly devoted to the interests of commerce, was particularly anxious to redeem this error. A claim was advanced, on the ground of prior occupation; and Grosseliez, already detached from the English service, was sent out in 1682 with another officer. He not only laid the foundation of a factory on Hayes River, but in the following spring surprised the British one on the Nelson, taking Gillam a prisoner, and carrying him to Canada; and yet soon after, by means not very distinctly stated, our countrymen again became masters of all these stations. In 1686, however, amid profound peace, the Chevalier de Troyes marched thither and suddenly took the Rupert, Hayes, and Albany factories. These movements do not seem to have attracted much attention in Europe; but when the war of 1688 broke out, hostile operations were carried on with greater ardour. During 1693-4-5, the different settlements were successively taken and retaken. In 1696, the English had recovered almost the whole; but in the following year, a squadron from France de-

* Robson's Account of Six Years' Residence in Hudson's Bay (8vo, London, 1752), Appendix, pp. 5-7, 11, 44.

feated the Hudson's Bay ships, and took all the forts except Albany. The treaty of Ryswick leaving things *in statu quo*, this state of possession continued till the peace of Utrecht in 1713, by which the various posts were restored to Britain.*

The Company seem now to have applied themselves with extraordinary activity to extend their trade. In 1720 they greatly extended their capital; the forts were repaired and enlarged; and stations were formed in the interior. Thus things went on smoothly till 1749, when a question was agitated in Parliament as to the propriety of continuing their monopoly. They were accused of neglecting the improvement of the country and the extension of commerce, and particularly of having taken no vigorous steps, as required by their charter, for the discovery of a north-west passage: but after a long investigation the legislature saw no ground to disturb them in the possession of their privileges.†

The charge, however, of neglecting the interests of geographical knowledge was still zealously pressed by some individuals, who asserted that they not only showed extreme indifference on the subject, but in fact anxiously checked discoveries which might have shaken their monopoly. This imputation appears to have been greatly exaggerated, if not altogether unfounded. Expeditions through Arctic seas and over frozen plains involve much expense and hardship, and, as long as the Company were struggling hard for their very existence, could not reasonably be expected. At length, in 1721, on the urgent representation of John Knight, one of their governors, they engaged in an enterprise having this object in view; fitting out two vessels, commanded by Barlow and Vaughan, while Knight himself took the chief direction. Their plan was to proceed northwards and endeavour to find a passage up the Welcome; being provided with a portable house and an ample stock of provisions for the winter. No very great alarm was

* Robson, Appendix, p. 8-13. † Ibid. pp. 13, 44-47.

therefore felt at their not returning the first year ; but when another elapsed, although a few cherished sanguine hopes that they had reached the Pacific, and were now on their way homewards round Cape Horn, anxiety became general. Captain Scroggs was despatched in the Whalebone to search after them ; but having arrived late he returned without any discovery, or, it is alleged, very diligent investigation. All attempts were then given up as hopeless, and yet, after the lapse of forty years, the sad secret of their fate was disclosed. Two whale-fishing boats having gone into a harbour on Marble Island, near the entrance of the Welcome, perceived a large space of ground overspread with memorials of the dreadful catastrophe. Anchors, cables, bricks, guns, and other articles, for which the natives knew no use, had been lying exposed during that long period ; and on stricter examination, some remains of the two houses were traced, and at length the hulls of the vessels were seen beneath the water. Hearne afterwards met some aged Esquimaux, who recollected, and could give him the particulars of this tragical event. They had seen the party arrive very late in the season, having apparently suffered many hardships, and the ships much damaged, yet exertions were immediately made to erect the house. The natives did not remain on the spot during that winter, but visited it again the following spring, when they found the original number of fifty much reduced by severe sickness. The survivors were actively employed, doubtless in attempting to equip their ships anew ; yet at the end of summer they were found still there, reduced to only twenty by the pressure of severe want and illness ; but as the Esquimaux remained in the vicinity during this winter, supplies of their coarse provision of train oil and blubber were gladly accepted. The natives removed in spring to another part of the coast, and afterwards returning found only five, subjected now to the last extremity of famine. These, having purchased some seal's flesh and blubber, devoured it with an imprudent avidity which proved fatal to three of them. The two others

survived many days, during which they were wont to go to the top of a neighbouring rock, whence they gazed long and wistfully towards the north and east in hope of succour, and on seeing none, often sat down together and wept bitterly. One of them at length died, and the other, while attempting to dig his grave, fell down and expired also.

This melancholy result threw a damp on the public mind, and a considerable time elapsed without further effort. In 1737, however, the project was revived with the greatest enthusiasm by Mr Dobbs, a gentleman of intelligence and property, and possessing much influence with government. At his urgent entreaty, the Company fitted out two vessels; but no record has ever been published of their proceedings, which do not appear to have been pushed with very great activity, since they did not reach beyond lat. 62° north. The Directors seem to have been disposed to let the affair rest; but Dobbs' dissatisfaction was extreme, and greatly heightened by correspondence with Captain Middleton, an officer long in their service. He loudly charged them as so intent on the preservation of their monopoly that they studiously checked discovery along their coasts, regardless even of the rich mines and fisheries which it might have opened. He appealed, therefore, to the Lords of the Admiralty, who, after long solicitation, granted the Furnace bomb-ketch, which was placed under the command of Middleton. He sailed in 1741, wintered in Churchill River, and on 1st July next year began his expedition. Although no voyage perhaps ever excited more interest and discussion, no distinct or connected narrative of it has ever been furnished; he merely communicated to the Royal Society extensive tables of his observations on latitude, longitude, variation, and meteorology.* The other particulars we must glean from the discussions of Dobbs and of others who ranked as his

* Philosophical Transactions, vol. xxxviii. p. 127; vol. xxxix. p. 270; vol. xlii. p. 157.

opponents. It appears that he proceeded directly up the Welcome, till, reaching latitude 65°, he turned a bold headland, and found himself in a deep sound or bay, which he termed the Wager, erroneously applying to it the word river. He ascended it fifty or sixty miles, but without finding any large opening or tide from the westward; and two smaller sounds, Deer and Savage, were also examined with as little success. The search in this channel was then given up, and returning to the open Welcome, he again steered northwards. A fair promontory, bending to the north-west, excited the most sanguine feelings, and was called Cape Hope; but in less than a day a gloomy reverse took place. Finding himself in a bay enclosed on every quarter, to which he gave the name of Repulse, he turned to the eastward, where he was soon arrested by what he terms the Frozen Strait, barred by ice from side to side. By a survey made from a high mountain, it appeared not less than sixteen or eighteen leagues in length, by six or seven in breadth, filled with shoals and islands of various size, joined together by large masses of ice. A strong tide ran through it, but this he conceived was only that which entered by Hudson's Straits and found its way hither by a circuitous channel.

Upon these grounds, Middleton pronounced that there could be no passage, or at best a very narrow one, blocked up almost the whole year with ice. Dobbs, however, was most reluctant to acquiesce in this conclusion, and his suspicions were kindled into a flame by communications from the surgeon and clerk of the ship, who undertook to show him "the discoverer's pranks." On their authority, joined to that of others, he arraigned the captain as having received a bribe of £5000 from the Company, and of going to seek the passage with a fixed resolution not to find it. These charges were unfounded; for Middleton's conclusions were in the main confirmed by Sir W. E. Parry, though he showed perhaps somewhat too peremptory an assurance and impatience of contradiction. However, Dobbs succeeded in persuading the public, and kindling in the Parliament and nation an enthusiasm hitherto un-

paralleled. A committee of leading persons undertook to raise £10,000 in shares of £100 each. The legislature sharing the general zeal, voted to the subscribers a reward of £20,000 in case of their object being attained. The captains were to receive £500, the mates £200 each.

The necessary funds being thus provided, two ships were built, the Dobbs of 180, and the California of 140 tons, placed respectively under Captains Moor and Smith. Mr Ellis went as the agent of the committee, to make draughts and observations, and to give advice as to the general course. To him we are indebted for the best account of the voyage, including important remarks on the country and climate. The Wager Inlet was pointed out in their instructions as the most hopeful quarter, being desired to push boldly through it, and after passing the narrow part, and getting into the open sea, to steer south-west, when, if they met an opposing flood-tide, they might be sure of having passed the most northerly cape of America. They were then to direct their course into a warm latitude, if possible as low as 40°, and there take up their winter quarters.*

On the 20th May 1746, the vessels sailed from Gravesend, and on the 6th June were in Kirkwall bay. On the 21st, four days after clearing the Orkneys, there arose a dreadful alarm from fire having broken out in the cabin of one of them near the powder magazine. This, it is observed, gave occasion to all the varieties of sea eloquence, crying, swearing, praying, scolding; yet amid this clamour, the proper measures were taken, and the ship and lives were saved. On proceeding westward, they were first surprised by the great quantity of drift-wood, next by the lofty islands of ice; and the approach to these last was announced by severe cold, and by fogs so low that they sometimes left the mast-head clear. On the 8th July they entered the straits by Resolution Island, and were soon among the Savage group, where they met a party of Esquimaux, of whom a description is given closely

* Ellis' Voyage to Hudson's Bay (8vo, London, 1748), p. 106-118.

corresponding to that of Ross and Parry. A brisk traffic was immediately commenced, which is admitted to have been very profitable, the other party stripping themselves almost naked, in order to find materials. The season was extremely unfavourable, and two of the Company's ships had been lost upon the ice; hence it was the 19th August when they reached Marble Island, and the weather was then so rigorous, that they determined to make no attempts that year, but to winter in Nelson River. On this coast they were struck with the prodigious height of the hills, the sides of which were rent and shattered into deep caverns. The streams flowing from the rocks were red and green, from the impregnation of copper and other minerals. Their voyage southward was incommoded by blustering snow, sleet, and fogs.*

On reaching the vicinity of York Fort on Nelson River, the expedition were much disappointed at being received by the governor in a manner extremely rude and unfriendly. He declared, that having received no instructions on the subject, either from the Company or the government, he must decline giving them any aid; in fact, he obstructed their views in every possible way. Circumstances, however, having placed them under the necessity of providing for themselves, with or without his concurrence, they began to prepare a mansion which they named Montague House, twenty-eight feet long, eighteen broad, and containing two stories six or seven feet high. By the beginning of November, the cold became intense; Hayes River was completely frozen over; and their bottled beer, though wrapt in tow and kept near a good fire, became solid. Nevertheless, fortified with a beaver robe reaching to the heels, two or three pairs of blanket-socks, and shoes of moose or elk skin, they were able to bear its utmost severity. They now bestirred themselves to procure a supply of food for winter. The game were chiefly hares and rabbits, for which snares of wire were found very useful, not only taking the animal, but protecting it

* Ellis, p. 120-147.

against beasts of prey; and whatever they caught was preserved by the cold perfectly sound till April. After Christmas, the frost reached its utmost intensity. They made a fireplace six feet long, and threw on it at once a horse-load of wood, yet though those close to it perspired, the ceilings and walls were frozen. In the morning, that part of the bedclothes which touched the walls adhered to them, and the breath covered the blankets with hoarfrost. When a door was opened, the stream of cold vapour rushing into the room was converted into snow. Spirits under proof, becoming perfectly solid, broke the containing vessels; and this mass, when melted, was found mere water. The whole strength was concentrated in a small portion, which, however, on being properly diluted, was found quite palatable. Spirits of wine assumed the consistence of oil. A man grasping an iron ring, had his hand made fast to it; a glass containing brandy was on several occasions frozen to the lips or tongue; and a finger having been imprudently thrust into a bottle to serve as a cork, could not be extricated without a part being severed.*

Two casks of brandy were allowed to the sailors at Christmas, which was celebrated with their usual wild and thoughtless revelry. To this, though perhaps without sufficient reason, Ellis imputes the appearance speedily after of the scurvy, under its most malignant form; and by the middle of February it had carried off three of their number. The real nature of this dreadful disease, and the powerful effect of vegetable acids in its prevention and cure, were still almost unknown. Tar-water was the only remedy from which they observed any good effects: yet they learned, that by the use of spruce-beer, the residents in the fort preserved perfect health, and had not buried a man in seven years. The settlers continued throughout estranged and hostile towards the exploring party, and endeavoured to prevent communication between them and the Indians. Ellis, however,

* Ellis, p. 150-180.

contrived to see a good deal of this people. They appeared to him honest happy rovers, preferring their country to all others under the sun. The attachment between parents and children is peculiarly strong, yet does not save the former, when infirm and unable to follow the long wanderings of the tribe, from being formally put to death. The father is said to require of his offspring this last office : " When they have dug his grave, he goes into it, converses and smokes for some time, drinks perhaps a dram or two, and intimates that he is ready. Two of them then take a thong, which they put round his neck, and draw it on opposite sides, till he dies by strangulation, when they cover the body with earth, and erect over it a kind of rude monument."*

The spring seems to have approached earlier than in James' more southerly station, for about the middle of February the weather became changeable, with occasional thaw. In March it was very inconstant, and much water was formed, insomuch that they began to dread one of those floods which sometimes suddenly break up the ice, roll along and bear down every thing that opposes their fury. Such a tempest might have loosened the ships from their moorings, and occasioned much damage ; they escaped it, however, as the ice melted imperceptibly away. On the 16th May, the frozen surface of Hayes River burst, and floated gently down ; on the 29th, by the aid of a high tide, they worked to the mouth of the creek ; and on the 2d June, with great labour, made their way into the open sea. Steering northward towards the Welcome, they discovered, in lat. 64°, Chesterfield Inlet. From a breadth of three or four leagues at the entrance, it increased to six or seven, and continued to be considerable ; but the water becoming fresher and shallower proved it to be a mere inlet. They then returned to the open Welcome, and about the middle of July began their examination of the Wager, the entrance of which was about five miles broad ;

* Ellis, p. 181-200.

but the tide ran through it like a sluice, at the rate of nine miles an hour; and the water boiled, raged, and foamed, with extraordinary violence. After passing Savage Sound, however, they found it broader, and proceeded more easily. On the evening of the 31st they heard a tremendous noise, but from a quarter too distant to be then reached. The surrounding scene was most striking, huge cliffs hanging over head, while waterfals, dashing from rock to rock, formed icicles in rows like the pipes of a great organ; and huge fragments, detached from the mountain-tops by the expansive power of frost, lay scattered around. In the morning, the appalling sound was traced to one stupendous fall, sixty yards broad. Above was a rocky strait, only navigable for the boat at high tide; the bottom could not be reached by a line of 140 fathoms; and though the water on the surface was fresh, a bottle let down to a certain depth brought it up salt. On the 3d August, at nightfall, the strait became shallow; and in the morning it was seen to end in two small unnavigable rivers, one from a lake in the south-west. It was thus fully ascertained that the Wager afforded no hope of a western passage.*

On their return into the open sea, various opinions were agitated. One party, whom Ellis, according to his own declaration, strongly supported, remarked that the tide from the north was greatly the strongest in the Welcome, and was much more likely to come from the Arctic Sea than by the circuitous route supposed by Middleton. They proposed, therefore, that the Dobbs should thoroughly examine Repulse Bay, while the California diligently surveyed the adjacent coasts. This proposal was rejected by the majority, who, as he suspects, had become tired of labour and hardship, and impatient to return home. They agreed, indeed, to make a search as they passed round Carey's Swan's Nest,—a most unpromising quarter; yet when they came there, a council being called, the definitive resolution was formed to bear away

* Ellis, pp. 203-209, 250-258.

for England, where they arrived on the 14th October. We can find no record of the manner in which the disappointment of high-raised hopes was received, either by Mr Dobbs or the public. It certainly appears that no attempt was made to achieve what the present expedition had failed in; the interest of the public was cooled; and the search after a north-west passage was for a considerable time suspended.

An interesting account of this climate and country was reported to the Royal Society in 1770 by Mr William Wales, a man of science sent thither to make astronomical observations. Having sailed from England in the end of May 1768, he came on 5th July abreast of Cape Farewell. Here he was astonished by the masses of drift-wood, and then by the view of an island of ice as high as the main-topmast, its sides and summit adorned with spires, and the whole indented in the most singular manner. When surrounded by these and the ripplings which they caused, while a strong gale began to toss the vessel among them, it was impossible for him to avoid a painful sense of danger. On the 23d, having passed Resolution Island, he entered the straits. The northern shore is described as strikingly composed of very lofty naked cliffs, not now covered with snow, but with numerous torrents dashing furiously down their sides. Icebergs still abounded, both within and at the entrance; but he could not think with Middleton that they came from Greenland, or remained unmelted for years. They appeared to him produced on the wild coasts of the bay; and being chiefly frozen snow, a single summer would be sufficient to dissolve them. He makes the remark, since fully confirmed, that ice, after the sea water has been washed off, is entirely fresh, the salt having been thrown out in the process of freezing. He met parties of Esquimaux, whose dress and habits he describes exactly as Lyon and Parry have done. "Some," he observes, "call them treacherous, cruel, fawning, and suspicious; if they really deserve that character, they are the most

complete hypocrites that nature ever formed." They appeared to him open, generous, and unsuspecting; liable indeed to fits of passion, but soon reconciled. Judging of them by their implements he thought them excelled by few people in a genius for the arts.*

Wales landed and spent the winter at Churchill Fort, then the chief settlement. He could not discover an acre fit for cultivation in the whole country around, which consisted of bare rocks, loose gravel, and marshes, the latter producing a long grass which was cut for the cattle. Fir trees alone grew to any size; the others were mere bushes, yielding however delicate berries. August he describes as the height of the *small-bird* season, when young geese, ducks, curlews, and plovers abounded. In September the first of these passed to the southward in large flights, and many were caught. October brought partridges and rabbits, chiefly in the upper country, to which a party went out, lodged in tents of deer-skin, and brought in a large supply. By the 6th November the river was frozen over, and a glass of brandy in the observatory became solid. When, however, a small vial was sealed up, by the cork being covered with water, which instantly froze, this spirit continued liquid during the whole winter. The air was now silent and void, or only relieved by the occasional flight of a solitary crow. As in other instances, the bedding was frozen to the boards, and they could scarcely sleep an hour for the cracking of the beams through the expansive power of frost. From the same agency, reports were often heard among the rocks as of numerous heavy cannon fired together, and splinters were thrown to an amazing distance.† By his meteorological table, it appears that the greatest fall of the thermometer occurred in January, when it was 45° *minus*, or 77° below the freezing point; it was, however, seldom lower than 20° *minus*. There was a constant haze on the horizon, and

* Philosophical Transactions, vol. lx. p. 102-111.
† Ibid. p. 118-125.

when the sun rose, two long streams of red light ascended with him. These were then inflected towards each other and met, forming a parhelion, which seemed to have its source in two other parhelia. In winter, when the solar orb never emerged from the mist, these three luminous arches went all round the horizon.

About the middle of March the thaw was sensibly felt; on the 23d April the ground began to appear; and on the 26th they had their first rain. Towards the latter end of this month the *spring-goose* season began; and in May the weather was really agreeable. Near the middle of June the river broke up, and yielded abundance of fine salmon, with the delicate small fish named capelin. July afforded radishes, lettuce, and turnip-tops, the latter of which they used for greens. He met a good many Indians, and was on the whole much pleased with them. He admits that they are revengeful, though the most honest creatures he ever saw, kind and friendly to each other and to Europeans; ignorant, but clever at repartee. He sailed on the 2d September, and in passing through the straits observed few islands of ice, and none in the Atlantic; whence he derived a confirmation of his opinion as to the speedy melting of those singular masses.*

The Company soon after became exposed, from a new quarter, to a very formidable rivalry. While Canada was under French dominion, the fur-trade, as already observed, had been carried on from thence with considerable spirit by a class of adventurers called the *coureurs du bois*; who, having pushed their excursions far into the interior, had come into partial collision with the Company's servants. This, however, from the limited extent of transactions on both sides, was not very serious; and the conquest of Canada in 1759 put a period for some time even to this competition. But similar operations were soon commenced by a number of persons, princi-

* Philosophical Transactions, vol. lx. p. 125-133.

pally from the Highlands of Scotland, whose hardy and adventurous habits were well suited to such pursuits, and who, after acting some time in their individual capacity, threw their stocks together, and, in 1783-4, formed the North-west Fur Company. This body became very prosperous; and from their central establishment at Montreal, extended operations to the remotest quarters of America. Their capital, amounting in 1788 to £40,000, had before 1799 increased threefold, and probably was afterwards much farther enlarged.*

The best account of the way in which this trade was managed, and of the mode of life led by the Company's agents, is that given by Daniel Williams Harmon, a citizen of the United States, who served them many years as a clerk, and afterwards became a partner. On the 30th April 1800 he set sail from La Chine with a squadron of thirty canoes, divided into three brigades, to each of which one or more pilots were attached. These barks were steered by Canadian voyageurs, the most skilful in the world for guiding a boat through the many perilous rapids. Like sailors in tropical seas, they had certain stations, where they claimed the right of ducking every new passenger, unless, to their great satisfaction, he chose to purchase exemption by giving a few bottles of spirits. Harmon, having embraced this alternative, witnessed a complete brightening of the doleful aspect worn at parting from their relations. At these rapids it was rather alarming to see the numerous crosses erected for persons who had been drowned; at one station there were fourteen, at another thirty. It was the 13th June before they reached the Grand Portage on Lake Superior, 1800 miles above Montreal; and here they found a fortified enclosure, containing a number of slight wooden tenements, surrounded by palisades. A general meeting was held at this season of the proprietors and clerks from the interior, bringing the pro-

* Mackenzie's Voyages from Montreal, &c., with Preliminary Account of the Fur-trade (4to, London, 1801), Introduction, pp. vii. xvii. xxii.

duce of their annual trade, and receiving articles wherewith to renew it. The occasion was celebrated with much mirth and a grand ball, at which the *ladies* behaved with greater propriety than our author expected, though it is admitted that during the festivity a drunken squaw stabbed her husband, who died in a few minutes.

Mr Harmon proceeded to Lake Winnipeg, and expected to have gone on to the Saskatchawan; but a new post was formed on Swan River, of which he was appointed to take charge. He had here an earnest of future hardships by spending a day, the first time in his life, without bread. Having received a pious education, he was scandalized at seeing no observance whatever of Sunday; the people carrying on business, playing at cards, and following other sports, exactly as on other days. On remonstrating, he received for answer, that there could be no Sabbath in the north-west country. He observes, at the same time, that though emergencies might occur from the natives coming in, to render some traffic inevitable, there was in general no obstacle to its being spent in a strictly religious manner. In fact, he found leisure to read the Bible and other religious books more carefully than he had ever done before.* We believe there has been much amendment in this respect; and before the author left the country, several of his friends had concurred with him in adopting the most serious views of religion.

Mr Harmon draws a picture, seemingly with painful truth, of the excesses then committed by the natives owing to the practice of making spirits a leading article of traffic. "To see a house full of drunken Indians, consisting of men, women, and children, is a most unpleasant sight; for in that condition they often wrangle, pull each other by the hair, and fight. At some times, ten or twelve of both sexes may be seen fighting each other promiscuously, until at last they all fall on the floor, one

* Journal of Voyages and Travels in the Interior of North America. By Daniel Williams Harmon (8vo, Andover, United States, 1820,) p. 25-61.

upon another, some spilling rum out of a small kettle or dish which they hold in their hands, while others are throwing up what they have just drunk. To add to this uproar, a number of children, some on their mothers' shoulders, and others running about and taking hold of their clothes, are constantly bawling, the older ones through fear that their parents may be stabbed, or that some other misfortune may befall them in the fray." On the arrival of a large party, there usually commenced a ball (or, as he says, rather *bawl*), consisting in mock fights, loud shrieks and cries, continued in most cases till three-fourths were unable to stand. It was commonly closed by a succession of fights, when serious outrages were committed, of which the perpetrators in their sober moments bitterly repented. On one of these occasions an Indian strongly attached to Mr Harmon stabbed him with a knife, which penetrated through his clothes. Next day he cried bitterly at having nearly killed "his father," whom he reproached for not having tied him, on seeing he had lost his senses. The dread of such incidents, as well as the clamour, rendered it impossible, while these scenes lasted, for the Company's servants to sleep their eyes; and sometimes after passing one sleepless night, the arrival of another party exposed them to a similar inconvenience. We shall hereafter have occasion to observe, that under the management of the existing Company, an entire stop has been put to these pernicious excesses.*

Mr Harmon describes with much feeling the extremities to which he and his companions were often reduced, owing to the uncertainty of the means whereby food was conveyed to them. On the borders of lakes and rivers, fish afforded a resource; yet ice and other causes rendered it precarious, and they were sometimes glad to collect again those which had been thrown away and were almost putrid. On the prairies, the buffalo presented an excellent and the moose-deer a delicious food;

* Harmon, pp. 62, 71, 72, 92, 93, 100, 112, 119, 139.

and there one or two Indians were usually engaged to hunt for them ; but these wayward purveyors were liable to superstitious impressions, which often paralyzed their exertions. One, on whom their main dependence rested, conceived the idea that the bad spirit had determined to kill him, and for that purpose watched continually at the door of his cabin, out of which nothing could induce him to stir. Another individual complained that when he was rushing against a deer or buffalo, the malignant demon raised such a cry behind him, that he durst not proceed. Mr Harmon, thus threatened with starvation, thought some artifice excusable. He wrapped a small portion of drugs in a paper, and desired him, when he heard this fearful sound, to throw it over his shoulder without looking back, when it would fall into the mouth of the bad spirit, and that then he himself should dart upon his prey. The hunter returned quite delighted with the charm, which had fully succeeded, and brought with him a fine fat moose. Still, on repeated occasions, our author found famine staring him in the face ; and boiled beaver-skins were sometimes his only resource. At one time he was reduced to rose-buds ; but that elegant diet, besides being very unsavoury, was in respect to nutriment so little better than nothing, as scarcely to support existence. Sometimes, amid the most extreme want, the arrival of a moose or a buffalo placed him in luxurious plenty. The natives, who had not the same resources, were not unfrequently, in the depth of severe winters, reduced to the most fatal extremities ; and cannibalism, to which they do not seem to have been impelled by ferocity, was then too often resorted to. The author saw a woman who was said to have partaken, in the course of one winter, of the bodies of fourteen of her kindred.*

The Indian tribes who wandered over the wide prairies adjacent to our author's station were chiefly those who bear the names of Crees and Assineboines. From the great abundance of game they derived an easy subsistence, and

* Harmon, pp. 86, 94, 95, 96, 110, 177.

are described as an extremely happy and contented race. They were in general disposed to be friendly with the Company's servants, from whose trade they derived great advantages. To their loss, it is true, they were supplied with ardent spirits; but they also obtained guns, powder, axes, and other implements of iron, without which, having quite disused the bow and arrow, they could scarcely have subsisted. They had, through the same channel, acquired a breed of horses, which had multiplied to such a degree as to be in the possession of almost every individual, and to have become an article of trade. They never sold one, however, without regret, and on such occasions the owner was heard whispering apologies to the animal, that necessity had compelled this parting, but not to be cast down, as the first opportunity would be taken of stealing him back,—a promise which, without strict watch on the part of the purchaser, was punctually fulfilled. When Mr Harmon visited one of their camps, he was almost overpowered with hospitality, being obliged to go successively to six or seven entertainments. Yet there was always something perilous in this intimacy. Not only in their drunken fits was life repeatedly threatened and attempted, but as, in a case of supposed injury, the vengeance was directed alike against the perpetrator and his friends, the latter were often struck by an unpremeditated blow. Our author learned once that every arrangement had been made to kill him by an Indian who supposed himself wronged by one of his intimate acquaintances; and he was only saved by the honourable feelings of another who had received him as a guest. Some painful instances were observed of European children, carried off or left in infancy, who had been so completely trained in the customs of savage life, that they could not by any means be recalled to civilized habits.*

Mr Harmon, who seems to have commanded the confidence of his employers, was latterly transferred to some

* Harmon, pp. 67, 70, 71, 101, 111, 122, 140, 141, 337.

of their remoter stations. In 1808 he crossed the Portage la Loche, or the ridge which divides the two great river-systems; and, like subsequent travellers, he considered the view thence of the Clear-water Valley the most enchanting he had ever beheld. After visiting Fort Chipewyan, the centre of all the transactions in the Athabasca region, he proceeded up the Peace River to Fort Dunvegan, agreeably situated amid fine plains. Here he received visits from Messrs M'Leod, Fraser, and Stuart, on their way to and from the establishments lately formed by the Company in New Caledonia, on the western side of the Rocky Mountains; and he himself in 1810 went to spend some time in that district. He was struck by the great height of those mountains, exceeding any he had ever seen, and also with the numerous streams which, coming from their farther side through a single narrow pass, unite to form the Peace River, whereby their waters are conveyed to the Northern Ocean. Nor was it till he was quite on the opposite declivity that he found any flowing towards the Pacific. He was employed at several forts situated on large lakes in that wild country. The Indian people in the neighbourhood, named Carriers, combined with the general character of the North American savage some peculiar features. They were yet in a happy ignorance of ardent spirits; though curiosity, it is said, led a number of them on a great festival day to see the Canadians get drunk. This mortifying scene they contemplated with great attention; but when the state of complete inebriation arrived, they were frightened, and ran to hide themselves in corners. Seeing afterwards those who had made the greatest noise fall perfectly still, they imagined that they had recovered their senses, and become ashamed of their extravagance. For some time they would not believe that the English had fathers or mothers, but supposed them to have come down from the sun or moon. They still viewed them as possessing supernatural powers, and when about to depart on a hunting excursion, would come and make large offers on condition of good weather being secured during

their adventure. They imagined that Europeans, by merely looking in their books, could cure a sick person though at a great distance, and often made earnest applications to this effect. Nothing astonished them more than the movements of a watch and their correspondence to those of the sun, which they could account for only by its being part of that great luminary, or at least in intimate communication with it. They had not the grave and serious character observed in those on the other side of the mountains, but, when they came to the forts, kept up a perpetual chattering; and notwithstanding their desire to please the whites, nothing was more difficult than to check their tongues any considerable time. Their rage for play seemed to exceed even the usual savage bounds, so that they would make a boast of having lost all they had, and being obliged to cut off part of their clothes, and even to strip themselves naked. The attachment between husband and wife was very strong, and a man has been known to commit suicide on the death of his partner. In this connexion strict fidelity was exacted, but to the unmarried females a culpable license was allowed. Their only domestic animals were large dogs, which were employed in carrying burdens, and were the objects of great regard, being often called their children, and after death lamented in a manner somewhat corresponding. Their chief diet is salmon, which swarm in the western rivers, and during the season afford them food in abundance.*

In 1819, Mr Harmon, after having resided eight years on the western side of the Rocky Mountains, returned and spent some time at his native place. He afterwards resumed his occupations in the fur-trade, but left his journal, which his friend Mr Haskel of Burlington prepared for the press.

* Harmon, pp. 169, 170, 175, 191, 195, 197, 289, 293, 295, 335.

CHAPTER II.

Hudson's Bay Territory: Recent Discovery and Present State.

Hearne and Mackenzie—Parry, Franklin, and Richardson—Captain Back sent in search of Captain Ross—Aided by the Hudson's Bay Company—Reaches Great Slave Lake—Discovers the Thlewee-choh—Winters on the Lake—Voyage down the River—Arrested by Ice—His Return—Successful Voyage by Messrs Dease and Simpson—The North-west incorporated with the Hudson's Bay Company—Privileges of that Body—Its Constitution and Management—Indian Tribes within its Jurisdiction—Valuable furred Animals, Beaver, Martin, Fox, Otter, &c.—Modes of catching them—Principal Stations—York Fort—Moose—Montreal—Fort Vancouver—Claims of the Americans—Settlement on the Red River—Import of Furs—General Course of the Trade.

It behoves us now to notice those more recent voyages of discovery which, though undertaken with a view to the north-west passage, have had for their chief result the exploration of the boundaries and remote geographical features of British America. The way had been prepared through inland expeditions by the two rival companies. In 1771 Samuel Hearne, employed by that of Hudson's Bay, descended the Coppermine River, and found it terminating in an unknown part of the Arctic Ocean. In 1789 Sir Alexander Mackenzie, one of the partners of the North-west Fur Company, went down the larger stream which bears his name, and made observations which left little doubt of its opening into another portion of the same expanse. That enterprising gentle-

man also penetrated in 1793 across the Rocky Mountains, and reached the coast of the Pacific.

These observations were sufficient to remove the impression which at one time prevailed that America presented an unbroken continent stretching towards the pole; and the proofs of an ocean bounding it at no very high latitude, gave again some probability to the existence of a passage to India by this route. The British government, therefore, after the close of the European war in 1815, engaged in a series of spirited attempts which had this object in view. Captain Parry successively penetrated into the Polar Sea, and discovered a range of large islands, to the south of which were extensive coasts, of which he could not perceive the boundary. Captain Ross, in an adventurous voyage fitted out by himself and his friends, ascertained that these coasts belong to a large peninsula named by him Boothia, and which terminates to the south in a narrow isthmus, connecting it apparently with the continent; though there has since appeared room to suspect that the whole may compose one large island. Captain Parry, in another voyage, explored the northern shores of Hudson's Bay, and discovered the strait of the Fury and Hecla, leading thence into the Arctic Ocean. Meantime, Captain Franklin and Dr Richardson, in two land journeys chequered by interesting events, examined a large extent of the northern coast, including the whole of that between the Coppermine and Mackenzie Rivers, with a considerable space east of the former and west of the latter. Captain Beechey, from Behring's Straits, approached to within 150 miles of Franklin's most westerly point. These expeditions and discoveries were chiefly made along the remoter limits of British America, and have been fully narrated in former volumes of this series.*

Out of these expeditions arose another conducted by Captain Back, which issued in the discovery of an ex-

* See Polar Seas and Regions, chapter vii., and Tytler's Northern Coasts of America, chapter iv.

tensive inland tract, watered by a large river and numerous lakes. As this is more intimately connected with our present subject, and has not been touched upon in any of our former volumes, a fuller detail of its results may be gratifying to the reader, and necessary to complete his knowledge of British America.

Captain Ross sailed in the summer of 1829, on the enterprise to which we have alluded, stimulated by the hope of redeeming the error he had once fallen into, and, with the aid of steam navigation, of completing the career of north-western discovery. Four winters, however, elapsed without any intelligence respecting him, —a circumstance which at once alarmed his friends, and excited the deepest sympathy in the public mind. Government having determined to expend nothing more on objects of discovery, declined at first to take any share in the matter ; but on further representation, and on perceiving that the feeling of the nation was strongly expressed, Lord Goderich announced a grant of £2000, provided the balance of the expense, estimated at £3000, should be contributed from other quarters. A committee was formed, and a subscription opened, which, at the first meeting, amounted to £800, and increased so rapidly as to leave no doubt of raising the necessary funds. Captain Back, greatly distinguished as the companion of Franklin and Richardson, had volunteered to lead the expedition ; while Mr Richard King engaged to act as surgeon, as well as to make collections of natural history, and afford other assistance. The Hudson's Bay Company, whose governor and deputy-governor were members of the committee, undertook to furnish gratuitous supplies, and every kind of local aid.

The expedition, it was arranged, should consist of two officers and eighteen men, of whom two had gained experience under Sir John Franklin ; the rest were to be selected from the inferior agents of the Company. The party were to proceed by New York, Montreal, and the chain of large waters to Great Slave Lake. They were to establish winter-quarters at its eastern extremity, from

the vicinity of which a considerable river was known to rise, and to flow in a north-eastern direction, so as probably to reach the ocean near the quarter where Captain Ross and his party were imagined to remain in durance. It was supposed, that before winter they might, in a light canoe, reach the sea, gain all possible information, and form their plans for next summer. They were then to push direct for the point in Regent Inlet where the wreck of the Fury had been left, which Captain Ross had proposed to visit, and avail himself of the abandoned stores. Should no trace of him be found, they were to search all the surrounding shores, erecting signals to attract the wanderers, and direct them where relief would be found. Should this their primary object fail altogether, it was hoped they might add to the stock of geographical knowledge, and perhaps, by penetrating from the mouth of the river to Cape Turnagain, explore a great part of the unknown coast.*

The expedition sailed from Liverpool on the 17th February 1833, and after a somewhat boisterous passage, during which they observed several formidable icebergs, reached New York on the 27th March. In that city the greatest anxiety was manifested to promote their object. The Hudson River Steam-boat Association proffered the use of their fine vessel the Ohio to convey them to Albany. At the British consul's they met Messrs Washington Irving, Audubon, Webster, and other eminent men, who expressed a deep interest in their success, and their departure was cheered by more than a thousand spectators. They soon reached Albany, but their journey thence was very tedious, in a large wagon, over a very indifferent road, and it was not till the 9th April that they arrived at Montreal. Here, though kindly received by all the authorities, they met with some troubles. Two of the men from England showed a disposition to shun the service, which Captain Back imputes to fears inspired by the very sympathy which

* Captain Back's Narrative of the Arctic Land Expedition (8vo, London, 1836), Preliminary Chapter.

they had excited; but Mr King thinks they had been treated too familiarly, and forgot their place. An attempt was made, by sending them forward to a distant post, to retain their services; still it was thought advisable, with Lord Aylmer's permission, to accept the offer of four soldiers as volunteers. Several Canadian voyageurs were also engaged; but Mr Keith, agent for the Hudson's Bay Company, counselled them to make the main selection from among the regular servants at Norway House, where much hardier men would be found. At the hotel where they lodged, a performance being given by the Bohemian brothers, a number of evergreens brought in to adorn the apartment took fire, and the house was consumed so rapidly, that many of the audience were obliged to escape by the windows; luckily the baggage had been sent forward, but the only serviceable barometer was lost.

On the 25th April they left Montreal, and sailed up the Ottawa. Some friendly aid was afforded by the steam-vessels; but the numerous rapids caused detention, and tried the firmness of the young hands, two of whom deserted. Proceeding along a small stream, they entered the Nipissing Lake, and thence by the Rivière des Français descended into Lake Huron. Being detained by fogs and contrary winds, they did not reach the Sault St Marie till the 11th May. Here Mr Bethune, the Company's agent, informed them that the despatches sent to Mr Simpson, the resident governor, owing to the obstruction of the floating ice, had preceded them by only eleven days,—an unfortunate circumstance, whence a difficulty was apprehended in making up their complement of men. Here provisions for five weeks were laid in, and many civilities, as well as some supplies, were received from the American commandant on the opposite side of the river.

The party now sailed along the northern bank of Lake Superior, not without some risk from fogs and squalls. The rocky border, in many places above 1000 feet high, always afforded coves into which they could

run; but they often sought to avoid a winding bay by steering directly from point to point, in the course of which they got some frights and duckings. On the 20th, under a salute of six guns, they entered Fort William, where Mr M'Intosh, by Governor Simpson's direction, had prepared two excellent light canoes, which it was necessary to use instead of large ones, in order to move along the narrow and obstructed rivers. The baggage and stores being nicely divided into pieces, and distributed as equally as possible, they began to ascend the shallow stream Kamenistiquoia, on which they saw with astonishment that stupendous fall which has been considered second only to Niagara. Having passed a portage over the dividing ridge, the Savannah conveyed them into Rainy Lake, whence they reached and crossed the Lake of the Woods, and then came to Fort Alexander, at the southern extremity of Lake Winnipeg. Here Captain Back waited four days for Governor Simpson, who came on the 10th June, accompanied by his lady, whose affection had led her to share the hardships of a voyageur life and a northern winter. That gentleman, with the intelligence and benevolence which mark his character, had made the most active preparations to promote the objects of the expedition. He himself was obliged by ill health to return to England, but every resource possessed by the Company was placed at their command. Pemmican, owing to a migration of the buffaloes, was unfortunately scarce; though orders had been sent to collect it along the whole line of route. He concurred with Mr Keith, that the best place for obtaining volunteer recruits was Norway House, by hastening to which they might intercept the different brigades of boats on their way to Hudson's Bay. Some difficulty was apprehended in inducing the men to engage; but Messrs Cameron and Christie, chief factors, were to be intrusted with this task, for which they were considered extremely well qualified, and Mr Charles, long employed on the banks of the Slave Lake, was to give all the benefit of his local knowledge. Mr

Simpson sent also a letter addressed to four individuals of standing in the service, inviting any one of them to join and act under Captain Back, with the assurance of immediate promotion, as well as of an additional £100 a-year while employed.

Every desirable arrangement was thus made; yet the impossibility of accomplishing the main object during the passing season could not but be foreseen more fully than ever. Captain Back nevertheless was most anxious to trace the course of the Great Fish River, so that he might form precise plans for descending it next summer. He therefore pushed forward, and reaching Norway House on the 17th June, found the officers of the Company eager to render every service, though the men showed some backwardness, and were disposed at least to drive a hard bargain. Even when engaged, an insurmountable obstacle arose from two of their wives. One, endowed with Amazonian powers, applied her fists with such force and perseverance to the ears of her husband, that he soon submitted. Another, an interesting girl of seventeen, assailed her partner with such tender sobs and embraces, that she equally gained her object. Two being thus wanting, Mr King was sent forward with the heavy equipments to Cumberland House, where the leader, in a light canoe, expected to overtake him. The former had a very hard voyage, working his way through a succession of little lakes and branches of rivers, and passing nineteen portages, as well as innumerable rapids. He had received peremptory orders not to break upon the precious store of pemmican which was to be their dependence on the voyage, and to subsist the men solely by fishing; but this resource was so very deficient, that they suffered severe privation, and at one time had only the alternative of famine, or of violating the solemn injunction. He had no spirits; and, though fully admitting the dangers of indulgence, he could not help thinking that an occasional dram would have cheered his people. He was delighted, however, with much of the scenery, particularly a reach of the river Missinnippi, bordered by

undulating hills and dense forests. Both Back and he were, like Harmon, enchanted at the view from the summit of the ridge, where it suddenly descends on the western side by a precipice of more than 1000 feet. For a space of thirty-six miles, the Clear-water River was seen meandering through a plain covered with luxuriant woods, and diversified by two parallel ranges of hills. Having reached Fort Chipewyan on the Athabasca Lake, Mr King, agreeably to his directions, descended the Great Slave River to Fort Resolution, which stands on the lake of that name. Here he found instructions and a guide to lead him to its eastern extremity, where a place had been fixed upon for the winter residence. He had to encounter a good deal of difficulty in tracing the winding course of this great sheet of water; but at length, from the top of a lofty rock, saw, amid the dark green foliage, the framework of a building, which he concluded could be no other than that which he sought. Accordingly he was there welcomed by Captain Back, who had already arrived.

This officer in about a week completed his party, though for that purpose he was obliged to accept the services of one of the natives.* On the 28th June, he embarked with a motley group, composed of "an Englishman, a man from Stornoway, two Canadians, two metifs (or half-breeds), and three Iroquois Indians. Babel, it was said, could not have produced a worse confusion of inharmonious sounds than the conversation they kept up." Nothing particular occurred till at the Pine Portage he met Messrs Stuart and M'Leod, two of the gentlemen to whom he bore the governor's invitation. It was the latter he most desired to join him, both as an intimate friend and as a person eminently qualified for the service; and to his great satisfaction, Mr M'Leod, though in bad health, most cheerfully complied.

At Fort Chipewyan, and still more at Fort Resolution, the most diligent inquiries were made of the In-

* Back, chap. ii. King, pp. 4-12, 26, 72-127.

dians as to a river communication with the sea. The general statement was, that from the eastern point of the lake there were two streams holding a course nearly parallel,—one called Thlew-ee-choh, the other Tēh-lon. The first was both difficult and dangerous, broken by rapids, and passing through a country destitute of trees, shelter, and game; while the other was of easy navigation, amidst wooded tracts well stocked with animals. They were represented too as falling into the sea not far from each other. The Tēh-lon was therefore recommended as every way the more eligible; yet Captain Back receiving, on the whole, the impression that it must flow eastward into Chesterfield Inlet; so that, as the more rugged Thlew-ee-choh could alone be depended upon for leading into the Arctic Sea, he determined to brave all its perils.*

The question, however, still remained, where the river was and by what route to reach it. The only distinct light was gained from an Indian named Maufelly, who had been there in his youth, but now retained only very faint and wavering recollections. To his guidance, nevertheless, they were obliged to trust. In sailing along the northern shore, they passed an extensive range of very bold and perpendicular cliffs; and on one of the loftiest of them was seated a majestic eagle, which, "unscared by our cries, reigned in solitary state the monarch of the rocky wilderness." At length they suddenly opened on a small bay, at the bottom of which a splendid fall, upwards of sixty feet high, rushed in two white and misty volumes into a dark gulf beneath. The scene was of the most picturesque and romantic grandeur,† and Maufelly declared that this stream, named the Hoar-frost River, would lead them to the great one sought for. The captain, therefore, disregarding the significant looks of his companions, determined to ascend it; and Mr M'Leod now proceeded to the most easterly point of the lake, to rear a winter habitation for their reception.

* Back, chap. iii. † See Vignette Title-page.

The ascent was attended with all the expected difficulties; it being necessary to drag the canoe over a slippery rugged steep, through trees and underwood. After passing two falls, they got her afloat, and enjoyed a short respite; but two more soon occurred. At length, after clambering over fallen trees, through rivulets and across swamps, they came to an open space, desolate and craggy, estimated to be 2000 feet above the water which they saw beneath. They had then a descent so precipitous as to be even dangerous. Rapids following in quick succession obliged them to be almost constantly lightening the canoe, and hauling it with a line; and their toil was rendered tormenting by the stings of innumerable sand-flies and mosquitoes. Temporary repose was at last found on the tranquil bosom of a small lake named Cook, connected with a stream barred by fifteen small rapids, all of which were cheerfully encountered, as the ladder to their grand object. It opened into a larger lake named Walmsley; but after an intricate navigation among numerous islands, they came to the end of it without finding any further channel. Maufelly announced a similar and much larger expanse, but was greatly puzzled how to reach it. Scouts, however, being sent in different directions, discovered a chain of small detached lakes, which they became convinced would conduct to the one in question; and starting with the first dawn, they carried the boat in one day over no fewer than fifteen portages. Next morning, after a continuance of similar labour, they found a small stream leading eastward, and after some perplexities mounted a hill, whence they had the satisfaction of looking on a clear body of water, bounded only by the horizon. It was the north-eastern branch of a great lake, afterwards named Artillery; and they soon found themselves in the channel of a river flowing in the wished-for direction. After only four rapids, it opened into another lake still more extensive, subsequently denominated Clinton-Colden. Coasting along its western shore, they were somewhat bewildered by bays and islands, of which last many were so large that they

were not unfrequently mistaken for the main land. The appearance, however, of numerous sandhills, convinced Maufelly, from recollections which had survived the lapse of so many winters, that they could not now be far from the rise of the Thlew-ee-choh. The lake for some distance near the shore began to be crusted with thin ice; while the mosquitoes and flies, their tormentors, lay like a black cover on its surface. Yet the mountainous aspect of the coast tended rather to discourage their hopes, till from a conical hill they discovered another immense lake, which they named Aylmer, abounding in large islands and in bays from ten to fifteen miles deep. On the opposite side it had quite the appearance of an inland sea; for, with the exception of some dark spots pronounced to be islets, the horizon was composed entirely of sky and water, gilded by the brilliant rays of a setting sun. Maufelly confidently predicted that in the vicinity of its banks would be found the desired spot; and though he still groped in uncertainty, there was no choice but to confide in him. At length he descried some sandhills which had left traces in his memory; and after ascending one, hastened down, saying, that in an adjacent bay he had discovered a spot fixed in his earliest associations as the scene of his father's exploits; and that it contained the source of the Thlew-ee-choh. The canoe therefore being lodged in the bay, a party was sent forward to search for that stream. As their return was delayed, Captain Back himself mounted one of the eminences, and thought he perceived a ridge, at the head of which springs were rippling which might contribute to form the river. The messengers at last appeared, with the happy assurance that these with others gave rise to a small lake, out of which issued a current, which was doubtless the one sought for.* The canoe was soon dragged over the height, and launched upon its bosom; and in descending its course for about twelve miles, it was found to spread into a larger lake, and to receive two tributaries,

* Back, chapter iv.

when there remained no doubt that, swelled by continued accessions, it would spread into a noble river. Unfortunately there appeared no certainty as to the point whither it would lead them. But the season was advanced; a succession of rapids was before them; and blue mountains in the distance gave warning that others still more formidable must be encountered. It was therefore necessary to be content with what had been achieved, and to regain their winter quarters. They retraced their course with little difficulty along the chain of the great lakes. At the end of that named Artillery was the river Ah-heldessy, which led to their destination; but its navigation was so difficult, and their bark so shattered, that they abandoned it and proceeded on foot. The path was extremely rugged, and at the highest part a scene appeared to which Captain Back had seen nothing in the old world bearing any resemblance. It was not alpine; the eye wandered over endless lines of round-backed rocks, with their sides rent into the most eccentric forms, like a stormy ocean suddenly petrified. The only vegetation consisted of a few tawny and pale-green lichens; and the stems of mountain-pines scathed by fire presented a mournful aspect. They endured much fatigue, as well as torture from flies and mosquitoes, till they reached the end of the lake, and discovered the framework of the house which Mr M'Leod had been employed in rearing.*

This mansion, completed by the 5th November, of wooden logs closely cemented with common clay and sand, was fifty feet long and thirty broad, divided into four apartments, with an open hall in the centre to which the Indians were admitted. Notwithstanding every preparation, the winter proved very distressing. The deer at this season had been accustomed to leave the high open tracts called the barren grounds, where they can scarcely be reached, and to seek the shelter of the woods, where they fall a prey to the natives; but in consequence of a course of mild weather, they

* Back, chapter vi.

remained still in those inaccessible tracts. Attempts were made to supply the deficiency by fishing; but the spawning-time, according to Mr King, had been allowed to pass, and though different bays and small lakes were tried, the produce was extremely scanty, while many of the nets were lost. They were, on this account, obliged to place themselves on a reduced allowance, and also to encroach on their stock of pemmican, though scarcely adequate to next summer's expedition. The Indians, deprived of their ordinary resources, clustered round the fort, and threw themselves entirely upon our countrymen. Though they could be allowed only what was barely sufficient to preserve them alive, the males showed extreme fortitude, never letting a murmur escape their lips; but their pallid visages, meagre frames, and sunken eyes, fully told what they endured. The moans of the children, and the hollow and sepulchral wail with which the mothers attempted to sooth them, were most distressing. A similar deficiency had been experienced for two successive seasons, throughout these remote districts; and during the last, forty of the chief hunters had perished by hunger, and fears were entertained of many who had not been heard of. We suspect they have acquired too much the habit of depending on the English forts, where in general they are supplied in these exigencies. So much have they come to consider this their right, that when disappointed, they allow themselves to be hurried into the most violent deeds. Having been once harshly refused at a northern post, they surprised in the woods three of the Company's servants, and shot two; then rushing to the house, they found the superintendent in bed, and instantly murdered him. They were, however, ultimately hunted down, even by their own tribe. The limited bounty of the present party was received with gratitude and kindness, the only suspicion being excited by the operations at the observatory, which were by some suspected to be magical, and to have the effect of driving the animals away; nor were even the voyageurs exempt from this impression. The captain, how-

ever, having jestingly asserted his object to be directly contrary, and this being immediately followed by the capture of a bear, their doubts vanished. It is alleged that, though by exerting greater activity and going to a distance, they might have fared tolerably well, they preferred hanging on for their miserable allowance. They sought to eke it out by cutting off and roasting portions of their deer-skin robes, thus depriving themselves of a most necessary protection against the period of extreme cold, during which many of them perished, both around the fort and in remoter quarters. Augustus, Captain Franklin's Esquimaux guide, having set out from York Fort to join them, died on the road.

In February the thermometer sunk to 60°, and sometimes even to 90° below the freezing-point, and the rigour of the weather became remarkable, especially in the latitude of 63°. With a large fire in a small apartment, the heat could not be raised above 12°. Ink and paint froze, and boxes of the best seasoned wood split. The skin of the hands cracked, and opened in gashes. When the face was washed near the fire, before it could be dried, the hair was clotted with ice. All living beings disappeared, no sound but that of the passing wind broke the awful stillness.*

On the 25th of April, while the party sat conversing, a loud and sharp rap was heard at the door, and without waiting permission, the person burst in, saying, "He is returned, sir!"—"Who, Augustus?"—"Captain Ross, sir; Captain Ross is returned!" On demanding the authority, it was in his hand; a packet had already been delivered containing a number of letters, with newspapers, reporting this event, which had caused such a deep and joyful interest in Britain. Instructions were also received from Sir Charles Ogle directing Captain Back to turn his whole attention to discovery, especially on that part of the coast between the farthest point reached by Captain Ross, and Franklin's Cape Turnagain.

* Back, chap. vii. King, p. 171, *et seq.*

To this object, therefore, all their enthusiasm was now turned. The day was passed in a state of feverish excitement; and though the strictest temperance usually ruled the establishment, this happy occasion was celebrated by a generous bowl.

It was now considered that for their more limited object, one boat with a crew of ten men, all experienced voyageurs, good hunters, and inured to the most trying situations, might be sufficient. Such a bark was now building on Artillery Lake, and thither the pemmican and baggage were dragged in successive loads. On the 13th May, a solitary goose appeared, the harbinger of summer, followed before night by five more, and in the next three days by many other birds. Towards the end of the month the heat became oppressive, the thermometer standing in the sun at 106°, being 176° higher than on the 17th January; and the snow was fast melting. Mr M'Leod proceeded forward with a select party to bring down animals and form them into *caches* or hoards, concealed from the view of hungry wolves and Indians, yet indicated by certain signs to the advancing party. Finding it impossible to keep the house open on this desolate spot, they secured as well as possible the papers, drawings, and stores; then blocked up the doors and windows to prevent intrusion.*

On the 7th June Captain Back set out with four persons, each loaded with ninety pounds of pemmican; and after three days of laborious tracking over rocks and swamps, they reached the lake. As that expanse was still covered with ice, the boat was placed upon wooden runners to be drawn over it by two men and six fine dogs; but the surface, instead of being smooth, presented a bed of sharp angular spikes, the walking over which was most painful and difficult; and the runners were soon so peeled or otherwise injured as to render their destruction inevitable, unless protected by some durable material. There was nothing within reach but an iron

* Back, chapter viii.

saw, which was cut into slips and attached to them. Disappointed by Maufelly and another Indian who had promised to act as guides, they groped their way by a somewhat imperfect recollection; however, they succeeded without any material deviation in reaching Clinton-Colden Lake. The *caches* were tolerably abundant; in one day they found eleven animals, though several were musk-oxen, the flesh of which had a flavour almost intolerable. The men indeed at one time expressed a resolution rather to starve than eat it; but this was altogether scouted by their leader, who, to take away all pretext, adopted it as part of his own allowance. These supplies enabled them to keep the pemmican untouched. They had also some extremely bad weather, particularly on Midsummer-day, when they saw in the northern sky, accumulated in one black mass, all the horrors of a hyperborean winter. Hail, snow, and rain in ceaseless succession assailed them, and were followed by a wind so violent as to overturn the tent. Frequent showers and increasing heat so softened the ice, that both the boats and themselves were dragged along with great difficulty, not without danger, or at least fear of sinking. However, on the 27th June, they reached Sandhill Bay, delighted with the certainty that they were within a few miles of the stream that would convey them to the Polar Sea.

The joy thus inspired was considerably damped next day, when the boat, which it was necessary to convey from the lake into the river, was found composed of such soft materials, that it could not be dragged over a rocky portage. The crew were therefore ordered to carry it; a severe task, which tried their strength to the utmost, and was the more distressing from the fear that it might be often repeated. At length, through many obstacles from ice in the lakes and rapids in the stream, they reached their former station, and met Mr M'Leod with his party. He astonished them by his skill in the rifle, which is said to have equalled that of a Kentuckian, and by which he had provided largely for their wants. It was

now settled that he should return, prepare winter-quarters, fix on a good fishing-station, and meet the returning expedition at the end of September.*

The bark now began its voyage down the Thlew-ee-choh, with a load fitted much rather for a smooth sea than for the rugged and broken channel which it had to encounter. Twenty-seven bags of pemmican, with macaroni, flour, and minor articles, weighed about 3360 lbs., exclusive of rigging and stores, and a company amounting to ten. The burden was indeed gradually reduced by consumption, and still more by *caches* deposited at different points with a view to their return ; but the progress downwards, nevertheless, was not unattended with difficulty. On Lake Garry, a great expanse at which they arrived, they were startled by the view of extensive fields of ice, stretching to the utmost limit of vision. Hence, their farther advance seemed at first to be completely arrested ; but by following narrow lanes of water, and by cutting through the ice or lifting the boat over it, they slowly worked their way. The most serious obstacles were found in the rapids that interrupted almost every channel. Of these they had been forewarned by the Indians, who described them as in fact utterly impassable, and added that all of their countrymen who made the attempt had perished. Indeed, Captain Back conceives that nothing short of an almost superhuman bodily strength, joined to skill and long experience, could have enabled his two steersmen, M'Kay and Sinclair, to vanquish the obstacles. The question was also started, how the boat once down could ever be got up ; but their leader did not allow this consideration at present to disturb them. In the first great rapid it was seen to sweep over the eddy with the ease and buoyancy of a seafowl ; but this descent was soon followed by one both longer and much more appalling, in which the water had the force and velocity of a torrent. The boat having been lightened, Captains Back

* Back, chapters ix. x.

and King saw it flying with the speed of an arrow, and soon hidden from view by foam and rocks. Their agitation was heightened by what sounded like a wild shriek, but on running forward it proved to be the triumphant whoop of the crew at being safely landed. Some time after they encountered a succession of cascades, nearly two miles in length, and making an entire fall of about sixty feet; and it was only by alternately elevating and lowering the boat that the gulf below was at length gained. Elsewhere they had to pass a range of sunken rocks, over which the surges foamed and boiled with impetuous fury. They were next involved in a singular combination of fall, rapid, and eddy, where the bark was acted upon by such conflicting forces, that prudence ceased to be of any avail. It is supposed to have been only by a mistake of the directions given even by the skilful steersman, that she was saved from destruction. But Captain Back's greatest alarm was at a place where it was found necessary to dash through a range of breakers. He and Captain King had taken a station where they could see the boat issuing from between the rocks; but after a long time had elapsed, and they were sinking into utter despair, they learned that the crew had found a narrow channel, over which the bark was lifted, and the perilous passage thereby avoided.

All this while the main question continued to be, whether the river would lead to the Arctic Ocean, or to Chesterfield Inlet in Hudson's Bay. For about a hundred miles it continued to hold a favourable course towards the north-east, then opened into a long lake, named Beechey, only about seventy miles from Back's River in Coronation Bay, the point of all others they were desirous to reach. The lake, however, to their great disappointment, took a turn south-eastward, a direction which the river followed for a considerable space with little variation. But again they were cheered by its resuming a north-east course, which lasted nearly as long as the former one. Next followed a chain of great lakes,—

Pelly, Garry, and Macdougall,—throughout which, and for some space beyond, the course varied very little from due east, and they arrived within ninety-four miles of Chesterfield Inlet. To counteract this unfavourable impression they were relieved by the view of distant streams stretching northwards; and, after some time, were confirmed in the hope that the river had decidedly taken this direction. Following it some distance, they at length came to a spacious lake, which they named Franklin, and soon after regaining the channel, they were gratified by observing on the top of a hill a number of figures running about with great rapidity. These proved to be Esquimaux,—a welcome sight; for where they were the sea could not be far distant. But the utmost caution was necessary; for they might be, and as it proved really were, entire strangers to Europeans, and had seen coming in this direction only the Indians, their mortal enemies. They began by raising wild yells, brandishing their arms, and making expressive signals with the view of forbidding the English to land. Captain Back, however, going on shore alone without any visible weapon, deliberately walked up, and, making a friendly movement with his hands, called out *Timā*—Peace! They instantly flung down their arms, returned his salutation, and uttered many unintelligible words, which however were construed to be friendly,—a feeling which was soon established by the presentation of buttons, fish-hooks, and other trifles, in preference to the dangerous gift of knives and hatchets. They appeared on the whole superior to the tribes formerly seen, cleaner in their persons, and the females of so agreeable a cast of countenance that the men called them "bonnie-looking creatures." The intercourse continued to be good-humoured and easy; they were delighted at having their portraits drawn, and their names written down; and they assisted to drag the boat over a portage which had baffled the efforts of the crew. They had heard nothing of Captain Ross, but assured their visiters that the very next day they would reach the sea, and find a coast running

for a considerable way towards the north, then suddenly turning south and stretching far in that direction.

This prediction was soon fulfilled; for next afternoon, July 29, they descried a bold and broad headland, the aspect of which was decidedly maritime, and from its importance they gave to it the name of Victoria. Soon after, the shores widened in such a manner as showed that they were at the mouth of the Thlew-ee-choh, after a course of 530 geographical miles through an iron-ribbed country, without a single tree on its banks, forming five lakes, and broken by eighty-three rapids. After passing the headland and observing a picturesque waterfal, they saw the shores receding, yet still forming a bay, the eastern part of which showed open water as far as the eye could reach. The western, along which they specially desired to sail with a view to reach Point Turnagain, was heavily encumbered with ice; but they hoped soon to find a place whence they could pull across to it. Their prospects were now considered highly favourable, as, supposing only a moderate rate of going, the object of their voyage might be accomplished in ten days. After passing, however, a rocky cape 800 feet high, named Point Beaufort, the drift ice collected in great masses; and, on ascending the height, a solid body was discovered connecting both shores. This forced on them the gloomy conviction, that if their destination were reached at all, it could only be by slow and laborious efforts. On the following day indeed (31st July) the action of a southerly breeze cleared the coast they were on, producing fourteen miles of open water, but a movement in that direction would have carried them quite out of their desired course, and the bay becoming broader would only have been more difficult to cross. They therefore halted till the ice should make a more favourable opening; and, in fact, next morning a narrow lane appeared, by which they worked their way to the western shore. A bay was reached, supposed in the mainland, but found afterwards to be in an island separated by a narrow channel, and named Mon-

treal. The ice however, closely packed, barred all advance along this shore, and rendered it necessary to drag the boat on land, where they were detained for several days. This coast too was low and swampy, which, with frequent rains, so moistened the fern and moss collected for fuel, that a fire could not be kindled. They were thus debarred from even the comfort of a warm cup of tea, pemmican and cold water becoming their only repast. On the 5th August, while moving south-westward in search of a passage, they reached the mainland, and passed a large opening named Elliot Bay, without seeing a single particle of ice ahead; but this must have been an optical illusion, since, on pushing towards the north to take advantage of it, they became entangled in drift ice, which was evidently the advanced guard of the main body. Their progress being thus arrested, a party made an excursion fifteen miles along the coast to a point where they found a number of Esquimaux encampments, and whence they saw a distant appearance of mountains and open water.

On the 7th, a heavy rain and strong south-east wind dispersed the ice with a celerity which quite astonished those not accustomed to Arctic navigation; the bay, throughout its whole breadth, appearing clear, and the boat advancing at the rate of five miles an hour. The western shore continued low, and became more and more desolate; but the opposite one showed a bold and mountainous range, which, however, at the end of sixteen miles, terminated at Cape Hay, to the north of which no land was discovered; and according to information obtained from the Esquimaux, there appeared reason to believe that the coast there rounded away to the south-east. At length their enemy, the drift-ice, collecting again, obliged them to run ashore at a naked sandy point, which they named Ogle. On ascending a hillock, they saw the land stretching south-west, and forming a deep bay, bordered by high ground much cumbered with ice; yet the surface of the sea was chequered by some streaks of open water. In the afternoon of the 10th,

a fall of rain made a little farther opening, and in a zigzag course, partly by portage partly by lifting, they advanced somewhat more than a mile; but at this point a strong north-west wind drove the ice ashore in large perpendicular pieces, which not only dashed against the beach, but overspread part of the coast. As usual during such detention, a land expedition was sent forward. After a march of fifteen miles, they reached a green hill named Mount Barrow, and descried a bay fifteen miles wide, the north-western extremity of which they named Point Richardson. On the 13th, favourable prospects were repeatedly afforded; but at length the ice came rushing in with such force as to place the boat in danger, for which reason it was drawn across a narrow isthmus to the other side of Point Ogle.

Captain Back began now seriously to reflect on his situation, as the season, in this inclement region, might already be considered very far advanced. New ice was beginning to form on the shores and bays, while that of the preceding winter was only partially dissolved. The period, indeed, had elapsed, in which he had hoped to reach Cape Turnagain; to make the attempt now seemed very hazardous; and still less could he reasonably expect to bring back his crew in safety, and achieve the arduous ascent of the Thlew-ee-choh. The spirits, and even the health of the men, were visibly sinking under so many fruitless exertions. Some idea was entertained of a party attempting to reach Cape Turnagain by land; but this was considered utterly impracticable, from the swampy nature of the soil, in which, at every step, they sunk mid-leg deep. They could, consequently, have travelled only a few miles a-day, and any one attacked by sickness must have been left to perish. The country, too, was destitute of fuel, and almost of water. The determination to return immediately was therefore announced to the men, who received it with a satisfaction which marked the depression of spirits and despondency to which they had been yielding.*

* Back, chapters x. xi.

On entering the river, they soon came to the spot where they had met the Esquimaux, who at first were looked for in vain; and when at length they were descried, nothing could induce them to approach. The amicable feelings excited during the former interview had seemingly given way to their jealousy of strangers. Another large party was met, who, on seeing the English, fled howling behind the rocks. An attempt was made to attract some of them by friendly gestures, and it was thought with success; but a man was soon seen following and making a loud noise, throwing himself into wild contortions, and imitating the growlings of a bear; and it became evident that this was the conjuror of the tribe, who was seeking by such charms to induce the immediate departure of the strangers. The ascent of the river was tedious and laborious, though not quite so difficult as they had anticipated. On the 16th September they reached its highest portage, and next day had the satisfaction, according to appointment, of meeting their friend Mr M'Leod, who had been long and anxiously watching their return. Their passage through the smaller waters was easilyeffected; but the ascent to Slave Lake by the river Ah-hel-dessy, proved extremely laborious. They were at length obliged to abandon the boat, and they in vain endeavoured to secure its stores by a *cache* from the wolverines. Loading each man with seventy-five pounds, they began their march, and fortunately found the ice on the small lakes quite strong enough to bear them. Two very picturesque falls, which they named Anderson and Parry, were passed on the way to Fort Reliance.

On their arrival on the 27th of September, an active fishery was commenced, and such a stock of food provided as secured them against the distressing scarcity endured in the former winter. The Indians departed southward, leaving them in their cold and solitary mansion; and in their room came eighteen white wolves, "bony, and gaunt, and grim," who prowled constantly round the establishment, using every stratagem to gain a livelihood out of it. They aimed particularly at the

dogs, and succeeded in seizing one, but were beaten off before they could devour it. They hesitated not to make food even of the bodies of such of their own comrades as were shot; but having lost five, and finding little or nothing to be got, they removed to another station.

Captain Back had formed a plan for penetrating from Lake Beechey to the river of his own name in Bathurst Inlet, conveying thither the materials of a canoe, in which he might proceed to Ross's Pillar, and then to Point Richardson. But on inquiry amongst the Indians, he could not gain the smallest information. In this state of uncertainty, he considered the issue of the undertaking as very doubtful; while it would require one or perhaps two more seasons, a fresh set of men, and also a large additional expense, which he did not feel himself authorized to incur. With deep regret he renounced this plan, and prepared as soon as the weather should permit to turn his face homewards; and beginning to move on the 21st March, he reached Fort Chipewyan on the 10th April. Some casual detentions occurred, but no serious obstacle, directions having been left by Mr Simpson that he should be provided with every accommodation. On the 6th August he arrived in the vicinity of Montreal; since quitting which he had travelled 7500 miles, including 1200 of discovery. He proceeded direct to New York, where he embarked on the 17th August, and on the 8th September landed at Liverpool.*

Whatever truth there may have been (and it seems doubtful if there was any) in the former charges against the Hudson's Bay Company of coldness towards the cause of discovery, a very different spirit assuredly animates the respectable individuals by whom its affairs are now administered. To the expeditions conducted through their territory by Franklin, Richardson, and Back, their most zealous aid has been afforded; and the last of these gentlemen expresses in the strongest terms his obligations to Governor Simpson, Mr M'Leod, and others of the Com-

* Back, chapter xii.

pany's officers. Not content with these auxiliary measures, they have themselves come forward with a great effort to complete what those travellers had left imperfect. In the beginning of July 1836, Governor Simpson commissioned Mr Dease, chief factor, and Mr Simpson, a near relation of his own, with a party of twelve men, to set out for the northern coast. They were instructed to spend the ensuing winter at Fort Chipewyan, on Great Slave Lake; and in the beginning of summer four of them were to proceed to the north-east end of Great Bear Lake, and there to prepare accommodation and provisions for their next winter-quarters. The remainder were to employ the favourable season in descending to the mouth of the Mackenzie, and thence along the coast till they should reach the point at which Captain Beechey had been arrested. Even if obliged to leave their boat behind, they were provided with axes and cordage to make rafts, as well as with parchment and oil-skins for the construction of small canoes, and afterwards they were to repair to the winter-quarters established on Great Bear Lake. Next summer (1838), they were to haul the boat across to Coppermine River, then to make for Point Turnagain, and thence to seek their way to Point Richardson, Captain Back's farthest station. They were supplied with instruments of observation, and instructed to collect minerals and other objects of natural history.

The first part of this plan has been happily accomplished, for on the 9th July 1837 the party reached the most distant mouth of the Mackenzie River, in longitude 136° 36′ 45″ west. On the 20th they were in Foggy Island Bay, the farthest point reached by Franklin, and descried a range of mountains, which the obscurity of the weather prevented him from seeing. Their voyage of discovery now began. They passed a bay fifty miles broad, and discovered a new branch of the Rocky Mountains, which they named Pelly, from the governor of the Company. Their course then led along a low shore, composed in many places of frozen mud, on which were seen the mouths of several large

rivers. At length the water became so shallow and encumbered with ice, that they could not advance above four miles a-day. Near a cape, therefore, which, from the resident governor, they named George Simpson, it was found necessary to end the boat-navigation; and Mr Thomas Simpson, with a party of five men, undertook the rest of the journey on foot. They proceeded, making use of their portable canoe for the crossing of rivers, and on coming to the mouth of a broad inlet, obtained the loan of an Esquimaux oomiak. On the morning of the 4th August, they came in sight of Point Barrow, which they reached in the course of the same day. The ocean, extending to the southward, presented so inviting a prospect that, had such been their object, they would not have hesitated, in their skin canoe, to have made for Cook's Inlet. On the 6th they set out on their return, and on the 17th again reached the mouth of the Mackenzie.

The narrative of this important voyage having been obligingly furnished to us by the Company, is inserted at full length at the end of this volume.

Although the rivalry of the North-west Company had the effect of inspiriting and extending the trade, it was carried by them in many respects beyond the legitimate limits, not scrupling at open violence and bloodshed, in which both Europeans and natives were alike sufferers. The distance from all tribunals, as well as from the restraints and regulations of civilized society, left room for no law but that of the strongest. Never, perhaps, was a more furious contest waged between two mercantile bodies, destructive alike to the interests of both, and most demoralizing to the savage aborigines. At length the North-west Company, in consequence of their overstrained exertions, became involved beyond their capital; and being obliged to yield to their rivals, they obtained in 1821 an honourable capitulation. On transferring all their property and means of influence, the principal partners were admitted to shares in the Hudson's Bay Company, who took the inferior officers into their service. Thus these two concerns were united, with much advan-

tage to the peace of the fur countries, and perhaps to the permanent interests of the trade. A great blank was indeed felt in the city where the partners had resided, and where, according to Washington Irving, they had held huge feasts and revels, such as are described to have taken place in Highland castles. "The hospitable magnates of Montreal, the lords of the lakes and forests, have passed away;" and that city, as to the fur-trade, has sunk into a subordinate station.*

The Hudson's Bay Company is now the only survivor of the numerous exclusive bodies to which almost every branch of British trade was at one time subjected. We profess ourselves decidedly favourable to the free system, and jealous of those specialties by which many who admit the general principle contrive to except a vast number of particular instances. Yet, in the present case, there are some peculiar circumstances, which would, there is reason to believe, make an open trade very perilous. For example, it is carried on throughout vast regions, far from all control of law, and tenanted by savage races, who are easily prompted to deeds of violence. The struggle with the North-west Company, we have seen, filled large tracts with outrage, amounting often to bloodshed. The article, too, by far the most prized by those tribes, and which, amid an eager rivalry, cannot be prevented from coming into the market, is spirits, the immoderate use of which is productive of the most dreadful consequences. The Company, by their present position, obtained the opportunity, of which they have most laudably availed themselves, to withdraw it altogether as an object of trade; merely giving an occasional glass as a treat when the natives visit the factories. They have even prohibited it from passing, under any pretext, to the northward of Cumberland House on the Saskatchawan, so that all the settlements beyond form complete temperance societies.

Another very important specialty consists in the

* Astoria, vol. i. p. 23.

nature of the commodities drawn from this range of territory; namely, they are such as human industry cannot produce, or multiply according to the demand. The wild animals, which afford its staple of furs and skins, exist only in a limited number, and being destined to give way in proportion as colonization advances, will soon be thinned or even utterly exterminated. Bands of individual hunters, with no permanent interest in the country, capture all they can reach, young and old indiscriminately, without any regard to keeping up the breed. Thus the beaver, the most valuable of the furred animals, has been nearly destroyed in Upper and Lower Canada, and much diminished in the districts beyond the Rocky Mountains, which are traversed by trapping parties from the States. The sea-otter, on the western coast, which yielded at one time rich cargoes for the China market, has been so injured by the continued chase of the British, Russians, and Americans, that it has ceased to be an article of any commercial importance. From the same causes we understand that sea-elephants and other valuable animals, once found in crowds on the shores of New South Shetland, are hardly any longer an object of pursuit. In Britain, we believe, various species of game would soon be destroyed were it not for the preserve-laws; restrictions which would with difficulty be enforced on the banks of the Mackenzie and the Assineboin. During the competition of the North-west adventurers, a great part even of the wooded countries suffered severely; but since the Hudson's Bay Company obtained the entire control, they have carefully nursed the various animals, removing their stations from the districts where they had become scarce, and prohibiting all wasteful and destructive modes of capture. Particular care is taken to preserve the female while pregnant or rearing her young. Instead, therefore, of being in a state of diminution, as generally supposed, the produce is increasing, or rather recruiting, in all their domains.

We may finally observe, that in this vast open ter-

ritory the means of excluding rivalship are so imperfect, that without good management and liberal dealing it would be impossible to maintain their privilege. In fact, Mr Irving admits, that by the legitimate application of large capital, good organization, regular transmission of supplies, with faithful and experienced servants, they have carried all before them even in the western territory, where they are exposed to a full competition from the United States. Several associations from thence have made very active efforts to supplant or rival them, but without success.*

The Company possess the entire jurisdiction of these territories, unless in criminal cases, in which the courts of Canada exercise a concurrent jurisdiction ; but the great distance, and the imperfect means of communication, render it generally impossible to convey the offender and the evidence to its tribunals. The supreme direction is vested in a board consisting of a governor, deputy-governor, and seven directors, who hold their sittings in London. A resident governor, appointed by them, has the general superintendence of all the settlements, and is assisted by local councils, composed of the principal officers in each district, who meet him at central points during his annual tours of inspection. The acting officers consist of chief factors, each of whom has charge of several posts, of principal and secondary traders, and clerks. The higher offices are filled up according to merit from the inferior ones, so that it is perfectly open for a clerk to rise to the rank of chief factor. Four-fifths at least of the Company's servants are Scotsmen, and chiefly from the northern districts. They are reckoned the hardiest, most active, and enterprising, and the least liable to bad habits. In general, too, they are well educated, many of them having attended the University of Aberdeen. The journeys performed by these officers, and the adventures they have met with,

* Adventures of Captain Bonneville, by Washington Irving (3 vols 8vo, London, 1837), vol. ii. p. 17-19; vol. iii. p. 267-272.

would exhibit scenes and incidents as striking as most of those fictitious ones which so much interest the public. Mr Simpson, the present resident governor, has performed during his stay in that country upwards of 100,000 miles of canoe navigation. The chief officers, including the governor himself, often endure hardships which, to those accustomed to the comforts of civilized life, must appear almost incredible. They frequently spend months without seeing the inside of a house, going to sleep at night in the most sheltered spot they can find, wrapt in their cloaks, and a blanket which has served during the day as a saddle. Unless fortunate in the chase, they have no means of obtaining food, and are sometimes obliged to kill their dogs and horses to relieve hunger. Yet these hardy Scotsmen will find a livelihood in districts so desolate, that even the natives sometimes perish for want. Parties of them have spent whole winters on the banks of rivers or lakes, where their only sustenance was the fish drawn from the waters, without bread, vegetables, or any other article,—the roasting or boiling of the dish forming their only variety. Yet amid all these hardships, such is their zeal in the occupation, that a complaint scarcely ever escapes their lips.

The Indians throughout the wooded countries east of the Rocky Mountains are almost entirely employed in hunting the rich-furred animals, for the purpose of selling them to the Company. A considerable number of their young men are constantly occupied in conveying the provisions and stores by water to the different forts, and bringing back the furs there collected. At the beginning of winter, the season when the skins are in the best condition, they receive a supply of provisions, guns, and other necessary articles; and in spring bring to the several stations the produce of their chase. The British seldom hunt, unless for sport or to supply the table. The natives, in a great measure, are supported by the Company; and when at the forts, for traffic or other purposes, they live at free quarters, sometimes during three months at a time. The aliment procured

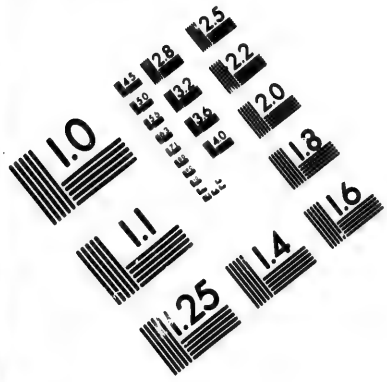
by themselves is chiefly fish, found abundantly in the numerous lakes and rivers. Deer, though pursued with activity, form a precarious resource, rendered more so by that improvidence which makes the hunter never think of laying up any store of food. A party have been known, after spearing a vast number of these animals in their spring and autumn excursions, merely to cut out the tongues, and allow the carcasses to float down the nearest river; though they knew that, two or three months after, they would be exposed to the utmost extremities of famine. Every Company's post serves as an hospital, to which they resort during sickness, and are supplied with food and medicine. When winter arrives the diseased and infirm are frequently left there, while the rest are employed in hunting. The directors have made great efforts to introduce vaccination, though it has been hitherto opposed by strong prejudices; but fresh instructions have been sent out on this subject in consequence of the violence with which the small-pox is raging on the border territory. This people, since the use of spirits and incentives to quarrelling have been withheld, are become peaceable, have made some progress in civilisation, and their numbers are increasing. The Company have made the most laudable efforts to instruct and civilize them, employing, at great expense, teachers and missionaries; and notwithstanding the obstacles opposed by their wandering life and rude habits, some success has been attained. The whole number in the territory east of the Rocky Mountains is estimated at 150,000.

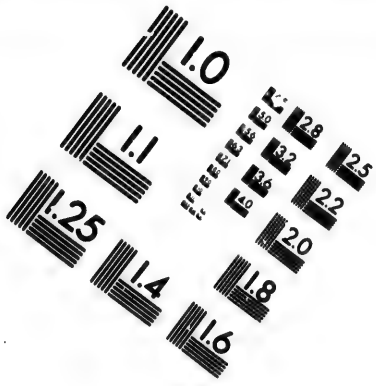
There are other Indian tribes of a different class inhabiting the prairie country, which, as already observed, extends over the whole southern border, from the Red River to the Rocky Mountains. They are numerous, completely independent, and carry on war with all the fierceness of the early Canadian hordes. When the agents of the Company are obliged to cross this tract, they are always well armed, and choose to travel mostly during the night, that they may the better avoid the perilous encounter of the natives. The latter subsist chiefly by

the chase of the buffaloes, which roam in vast herds over those wide plains. They have acquired, too, a considerable stock of horses, which they augment by every possible means, particularly by stealing. They are voluptuous as well as fierce, polygamy being generally practised by the chiefs. Among the principal of these tribes, are the Assineboins, Piegans, Blackfeet, Blood, Sarsee, and Plain Cree Indians. They have lately suffered dreadfully from small-pox, introduced from the American side; and fears are entertained that the disease may spread into the bush or forest lands.

The natives west of the Rocky Mountains are numerous, fierce, and frequently wage [illegible]us war with each other. They have also had s[illegible]flicts with the Company's officers; but the be[illegible]nding is now established, and the extension [illegible] settlements is understood to be ardently desired by them, probably with a view to traffic. The Company have thus been enabled to reduce greatly their means of defence. When Fort Langley, on Fraser's River, was first built, it was necessary to keep eighty men there; now the number does not exceed twelve.

The beaver is the main staple of the fur trade, not owing to the value of the skin, which, in proportion to its size, is inferior to that of the martin and sea-otter, but from its abundance, and the large and sure demand for it in the hat manufacture. It appears to be indigenous in all the northern parts of this continent, though in the settled countries, and even those open to private hunters, it is, as we have noticed, nearly exterminated. There are two modes of taking it,—one by traps, which is the easiest, and generally followed by single adventurers. The other is what is termed trenching or the ice-chisel. On a beaver-house being discovered, all the canals leading from it are stopped up; then, with the instrument above named, it is broken into, and the old animals speared. The young are left untouched, and thus the breed remains uninjured; while, in trapping, both old and young equally fall victims. The Com-





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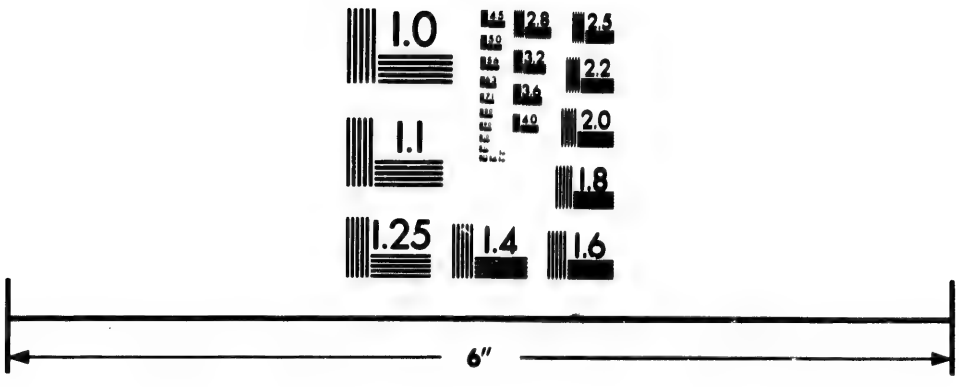

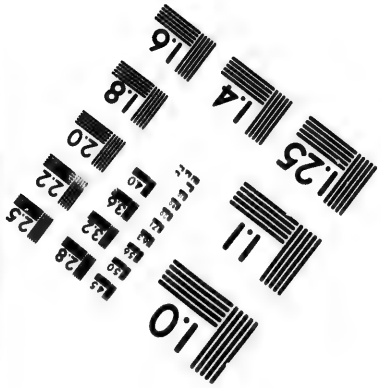

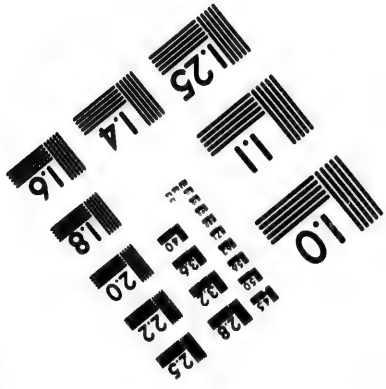

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pany, therefore, have prohibited the latter operation in all their settlements, and allow only the other and less injurious mode of capture. The skins are divided into *parchment*, or those of the old animals; and *cub*, or those of the young ones. The latter are the finest, but from their smaller size are not of equal value with the others. They have of course become much rarer, since their capture was prohibited.

The martin ranks next in importance, and has the finest fur of any land-animal in the new continent. This beautiful quadruped can be taken only by traps, laid baited across its customary tracks, which the natives are skilful in discovering. Its abundance depends mainly on that of rabbits and mice, which are its principal food; and as a dry season is favourable, and a wet one injurious to the rabbit, so is it also to the martin. Its skin is used for muffs, tippets, and other ornamental articles, and is usually sold in this country as sable, very few of the real sable being imported. The mink and the fisher are animals of the weasel species, somewhat allied to the martin; but the latter is much larger, though its fur is greatly inferior in value. The fox also in this country affords a few beautiful specimens, especially those of the black or silver kind, which are the most valuable of any, but found in very small numbers, while the red and speckled are not much prized. Mr Simpson confirms Mr Wilson's opinion, that these are all casual varieties of one species, the different colours being often produced in the same litter. The musquash, or musk-rat, is found throughout the continent, but especially in the vicinity of Hudson's Bay; and though the skin does not bear a high price, the vast number taken renders it an article of some importance. It is a species of diminutive beaver, building similar houses, and captured in the same manner, chiefly by spearing. The fur is used in the manufacture of inferior hats.

The bear and the wolf, those fiercer quadrupeds, form also profitable objects of hunting, and are killed chiefly by means of the fowlingpiece. For the wolf, spring guns

are much used, having a cord attached to them, to which the bait is fastened ; and when he seizes it, the string pulls the trigger, and the ball is discharged. These animals, however, being extremely sagacious, have been known to cut the cord, and carry off the bait without sustaining injury. Bear skins are much used in the northern countries of Europe, both for warmth and ornament, particularly on the outside of carriages. The hide of the wolf is considered peculiarly fitted for knapsacks and similar purposes, for which it is much employed in Germany.

The sea-otter affords one of the most valuable of American skins ; but being confined to the shores of the Pacific, it is consequently taken only in the territory westward of the Rocky Mountains. It is commonly killed by the gun, at other times it is caught on the rocks, but more usually it runs far out to sea, and must be pursued till it is exhausted. The number, as already observed, is now so much reduced as to render the chase an object of very little consequence. The last ship from the Columbia did not bring home quite 150 of them. The land-otter abounds on the border of all the interior lakes ; but its skin is comparatively of little value. It is used for collars, linings, and other appendages of dress.

The prairie country contains only one species of game, the buffalo, herds of which roam over it in vast numbers, feeding on its luxuriant herbage. It is hunted in a bold style, on horseback, with the gun. The assailant rides up till his horse's head is on a line with the neck of his prey, when, pointing the muzzle of his piece, he discharges the contents into its side, near the heart. He then gallops off, furiously pursued, reloads, and returns to the attack, till the animal is despatched. A well-trained horse, before being exhausted, will enable him to kill twelve or fifteen of them, which he then proceeds to cut up, and to convey the flesh and hides to the encampment. Buffalo robes, as they are called, are objects of American commerce, but are seldom exported from Hudson's Bay, as they would not pay the expense of carriage.

The Company have four principal stations, on all of which a portion of their vast territory depends. These are York Fort, Moose Fort, Montreal, and Fort Vancouver on the Columbia; and from each of these the materials of trade are despatched, chiefly by canoes, to the different houses and forts in the interior, while all the furs collected are sent back in return.

York Fort, the most important, commands all the vast region extending west and north of Hudson's Bay, bounded by the Arctic Ocean, the Rocky Mountains, and a line drawn from the Bay through Rainy Lake, the territory east of which is attached to Moose Fort. The inferior stations dependent upon it are very numerous. On the coast of Hudson's Bay are Forts Churchill and Severn; and almost all the numerous lakes to the north-west have their fort or house, such as Trout, Beaver, Cat, Severn, Swampy, Split, Nelson, Deer, La Rouge, La Crosse. There are also Rock House on Hill River, and Oxford on Holy Lake; while on the great expanse of the Winnipeg stand Norway and Berens River Houses, with Fort Alexander. On the Saskatchawan are Cumberland, Carlton, Manchester, Edmonton, and Acton or Rocky Mountain Houses. On the Athabasca lake are seen Forts Chipewyan, Wedderburne, and Fond du Lac. On the Mackenzie, in its course down to the Arctic Ocean, appear Forts Simpson, Norman, and Good Hope. The Indians attached to the latter approach but do not actually reach the shores of the northern sea, which are occupied by the Esquimaux, a people against whom they entertain a deadly enmity. The Company have never in consequence been able to open a communication with that remote coast. On the upper part of the same river, they have Forts Vermilion and Dunvegan, and another Rocky Mountain House.

Moose Fort, at the most southern extremity of Hudson's Bay, presides over all the country between that vast gulf and the Canadian lakes; and on the large branch of the former, called James's Bay, are Albany Fort, East Main Fort, and Rupert's House. On

the river Albany are Martin's Fall and Osnaburgh Houses, while on the Moose or Brunswick is New Brunswick, and south-east from the latter, Frederick House. On the small lakes named Mistassinny, Big, Wagwanapy, Abbitibbe, and Temiscaming, are establishments of the same names. At the north-east angle of Lake Superior, Michipicoton, an important station, draws supplies and provisions from the States of Michigan and Ohio, and forwards them to the forts in its vicinity. It is subordinate, however, to Moose, transmitting thither the furs collected in the neighbourhood. The Company have commenced on this great lake a fishery for the supply of Canada. On its western shore is Fort William, and there is also a post at the Falls of St Mary.

Ungava Bay, at the exterior entrance of Hudson's Strait, contains a small station for collecting the produce of the adjacent coast of Labrador, chiefly consisting of oil from the seal and porpoise. There are also establishments for the taking and curing of salmon, which is sent to Quebec.

Montreal is the centre of the transactions carried on in the Canadas; but from the dense population of these provinces, the Company are exposed to great rivalry, and the game has been much thinned. Their most valuable places of trade are those called the King's Posts, in the unoccupied tracts on the Lower St Lawrence. The produce of the lower shores of the same river, and of a great part of Labrador, is collected at Quebec.

Lastly, the Company have important stations to the west of the Rocky Mountains, though the territory on the Columbia, as already stated, is a subject of dispute between Britain and the United States. Mr John Jacob Astor, a citizen of the latter country, built near the mouth of that river a large fort, which was named Astoria, and became the seat of an active and prosperous trade; but in October 1813 it was delivered into the hands of Mr M'Tavish, a partner of the North-west Company. According to Mr Irving, that gentleman, taking advantage of the war between the two nations, brought

against it a force which the Americans were unable to resist, and the fort was surrendered by M'Dougal, the person in charge, on payment of 40,000 dollars for the furs collected there, which are said to have been of much greater value.* We are assured, however, that this was a transaction of simple sale, and that the price was such as Mr Astor had every reason to be satisfied with. Governor Simpson, when on a visit to the shores of the Pacific, finding the situation inconvenient and the soil barren, removed the establishment sixty miles up the river. Here he built a fort, which he named Vancouver, after that celebrated navigator, who made so excellent a survey of this coast ; and in its vicinity he formed an agricultural settlement, peopled by a number of the Company's retired servants. About a thousand head of cattle are fed, and from 30,000 to 40,000 bushels of grain are annually raised ; hence Fort Vancouver is now the grand depot and the centre of their operations in the western district. Captain Wyeth, of the United States, formed a station in the neighbourhood, on the island of Wappatoo ; but having suffered severe losses, was obliged to sell it to the Company, who, Mr Irving observes, maintain an unrivalled sway over the whole country watered by the Columbia and its tributaries. From their emporium at the Fort, detachments are sent in every direction to supply the inferior posts, to trade with the natives, and to trap upon the various streams. These individuals thread the rivers, traverse the plains, penetrate to the heart of the mountains, extend their enterprises northward to the Russian possessions, and southward to the confines of California.† On the Columbia they have Forts Nez-percés, Okanagan (at the junction of the river of that name), and Colville. On Fraser's River (which falls into the Gulf of Georgia) and its branches are Forts Langley, Thompson, Alexander, Chilcotin, St James, and Fraser. The

* Astoria, vol. iii. p. 231.
† Adventures of Bonneville, vol. iii. p. 268-271.

principal maritime posts are on Millbank Sound, Puget's Sound, the Gulf of Georgia, and Babine River.

There exists a serious controversy as to the boundaries of this region, which is the more important, as the American government has recently shown a disposition to press its claims, and has even voted a sum of money to erect a fort on the Columbia. The spot is not fixed, but is to be within its tide waters, or less than 100 miles from its mouth. We shall lay before our readers a brief view of the leading facts connected with this disputed point.

In 1579, Sir Francis Drake sailed along the coast, and named it New Albion, under which appellation it has always been recognised and claimed by Britain. The Spanish voyages we need not inquire into, as no demand is at present founded upon them. Captain Cook, in 1778, being employed to make a general survey of the shore, in search of a north-west passage, came upon it first in lat. 44° 33′, where his view to the north was bounded by Cape Foulweather. Being then obliged to stand out to sea, he again struck the land in lat. 47° 5′, whence he proceeded to the northward. The Columbia lies between these two points, and consequently escaped his observation.*

In July 1788, Mr Meares sailed along the same coast, and, after passing Cape Shoalwater, obtained the sight of a large bay, which appeared highly promising. On attempting to enter, however, the water soon shoaled to seven fathoms, and from the masthead breakers appeared to extend the whole way across. He gave to it, therefore, the name of Deception Bay, and to its northern bounding cape, that of Disappointment. But in the month of September he met near Nootka an American ship, named the Washington, equipped under the patronage of Congress, when Captain Gray, the commander, stated, that he had entered a harbour to the southward, but with great danger of being wrecked on the bar,

* Cook's Third Voyage (4to, London, 1782), vol. ii. p. 260-262.

which would admit only small vessels, and that one of his men was killed, and an officer wounded, by an attack of the natives. Meares did not recognise this as his Deception Bay, which, however, it has been since proved to be.*

In 1792, Vancouver was employed to make a minute survey of this coast, which he executed in the most careful and skilful manner. At Nootka, he also met Captain Gray, who had returned, and who furnished him with a chart of his navigation into the Columbia. The English armament afterwards sailed southwards, and Lieutenant Broughton having succeeded in bringing one of the vessels within the entrance, was instructed to explore the river as high as possible. He found Gray's map very defective, and discovered that the point which he had reached, instead of being thirty-six miles above Cape Disappointment, as represented, was in fact only fifteen. The entrance to this extent appeared decidedly to be nothing more than a bay, into which the Columbia fell; while the mouth of the river itself, much farther up, was ascertained to be only half a mile wide. Mr Broughton ascended it eighty-four miles, carefully surveyed its banks, and took possession of the country in the name of his Britannic Majesty.† Captain Vancouver also considered himself entitled to take similar possession of the whole coast.‡

British traders, it appears, were also the first who crossed the Rocky Mountains. In 1803, Messrs M'Gillivray and Thompson set out with this intention; and though the former was arrested by illness, the latter accomplished his journey, and gave his own name to one river, and that of his companion to another. It is manifest, too, from the journals of Mr Harmon, that regular expeditions continued to be made into this region. In 1808, he mentions the arrival of Mr Simon Fraser and a party, who had reached the Pacific, and examined some part of its

* Meares' Voyages (4to, London), pp. 167, 219.

† Vancouver's Voyage (3 vols 4to, London, 1798), vol. i. p. 213; vol. ii. pp. 53, 56, 57, 65, 75.

‡ Ibid. vol. i. p. 289.

shores. In the following year Harmon himself crossed the mountains, and found regular posts established on M'Leod's, Stuart's, and Fraser's Lakes. In 1811, Mr David Thompson, who originally opened this intercourse, descended the Columbia to its mouth, where he found the Americans building the fort of Astoria. This was therefore the first fixed establishment formed, at least on the lower part of the river; but we are assured that they never exported any furs from it, preferring to sell all they collected to the North-West Company, who became masters of the station, in the manner before related.* The Americans built a fort also on Thompson's River, but abandoned it. Perhaps it may be maintained, that the expedition of Lewis and Clarke, in 1805, gave them some claim to the southern branch of the stream named after the former traveller, with the fertile country on its banks. But even this rests on doubtful grounds, and they appear, from the statements just made, to have no right whatever to the region northward of that river. The free navigation of the Columbia is the more important to British interests, as none of the more northern streams can be passed even by boats to any distance upwards. Hopes were for some time entertained from the one called the Fraser; but when Governor Simpson descended it in 1828, he found the passage most perilous, and made so many hairbreadth escapes, that it was not judged prudent to attempt returning by the same way. The territory immediately to the north of the Columbia is named New Georgia. Farther, in the same direction, are New Hanover, New Cornwall, and New Norfolk, names given by Cook, Vancouver, and other British explorers, the interior of which is indisputably ours, but the Russians possess the coast, in virtue of the discoveries of Behring, and as secured to them by the treaty of 1825. This cession, however, has not prevented the Company from establishing a number of fishing-stations along the shore.

* Harmon's Voyages and Travels, pp. 173, 194, 195, 220.

Besides these trading stations, the same body have an important agricultural settlement on the Red River, which rises within the territory of the United States, and, flowing northward, joins the Assineboin, after which the united stream falls into Lake Winnipeg. Here, in 1813, the late Earl of Selkirk established a colony, which suffered severely from the hostility of the Indians and of the North-west adventurers. Some years ago, the Company adopted the plan of assigning lots of land to meritorious servants retired from active duty; and many, not only Indians, but Europeans who had married native women, gladly accepted this boon. Hence the colony, within a short period, rose from a population of 500 to not less than 5000. The grants consist of about 100 acres each, with six chains frontage on the water, and reaching a mile inland, while the whole extends about forty miles along the river. A sure market for their surplus produce is secured by the demand for provisions to the several settlements. The colonists, including the Indians, profess Christianity, and follow the habits of civilized life. Thirteen schools and seven places of worship, Protestant and Catholic, are maintained by the Directors. A strict watch must be kept against the Indians of the prairie, who however cannot make head in open contest against the superior arms and discipline of the settlers. This establishment is under the jurisdiction of a separate governor and council, subordinate, however, to the governor resident at York Fort; and it is divided into four districts, with two magistrates over each.

The Company's vessels, carrying out the supplies and stores to Hudson's Bay, sail from London on the 1st June, so as to arrive about the end of August, when the navigation becomes every where open. They then deposit their cargoes, which remain in store till the commencement of the ensuing season; when in return they receive furs and other articles which have been brought from the interior, and commence their voyage to England if possible before the end of September. The

ships employed in the trade of the western territory, that, namely, which stretches along the shores of the Pacific Ocean, leave the river Thames in the month of November, and sailing round Cape Horn, arrive at Fort Vancouver in the following May. In the return voyage a similar order is observed. Consulting the convenience of the trade and the periodical nature of the prevailing winds, the shippers leave Nootka Sound and the mouth of the Columbia, towards the close of the year, and reach London about the beginning of summer. It is thus manifest, that two vessels must be employed in accomplishing the exchange of an annual cargo. As to the principal commodities obtained in these distant regions, it may be observed, that they are in general the same as those on which the Hudson's Bay Company set the greatest value in other parts of their territory. The skin of the sea-otter has always brought a high price, being esteemed the most precious species of peltry to be found on the western borders of America. The best market for it in former times was China; but until the East India trade was thrown open, no inducement was presented to British ships to carry a cargo thither, not being allowed to load in any port of that empire. Hence the North-west Company for several years chartered a ship from Boston, through which they carried on the traffic; but of late, owing to the causes already assigned, the savage mode of capture and the devastation committed by private interlopers, the quantity has become so small, as no longer to repay the expenses of such a voyage.

The following is an account of the furs exposed for sale by the Hudson's Bay Company in December of the four years 1834-5-6-7 :—

	Skins of														
December 1834.	Beaver.	Martin.	Otter.	Fox, Silver & Cross.	Other Foxes.	Musquash.	Bear.	Ermine.	Fisher.	Lynx.	Mink.	Wolf.	Wolverine.	Badger.	Swan.	Raccon.
York Fort.....	30,658	21,759	8,778	803	6,977	369.266	4846	386	3386	7,839	10,001	7880	1442	910	7898	493
Moose Fort.....	35,734	36,710	9,659	261	1,594	255,369	1537	105	1294	5,882	9,875	4	28	9	20	4
Canada.....	6,896	1,021	366	2	..	39,457	68	..	16	34	224	..	1	..	..	16
Columbia, about	25,000	5,000	3,500	..	300	30,000	1000	..	600	500	5,000	600	100	150	..	200
	98,288	64,490	22,303	1066	8,871	694,092	7451	491	5296	14,255	25,100	8484	1571	1069	7918	713
1835.																
York Fort.....	32,890	24,871	5,948	569	6,319	888,947	2654	..	1247	4,054	7,343	2802	1093	495	4692	92
Moose Fort.....	17,709	24,780	5,581	235	2,147	161,079	533	..	705	2,407	7,226	20	45	3	11	3
Canada.....	7,309	4,854	1,458	19	18	31,620	190	..	77	79	740	..	25	..	..	27
Columbia, about	21,000	6,500	2,500	87	220	30,000	750	..	450	450	2,500	900	100	200	..	400
	78,908	61,005	15,487	910	8,704	1,111,646	4127	..	2479	6,990	17,809	3722	1263	698	4703	522
1836.																
York Fort*.....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Moose Fort.....	17,951	36,131	4,727	164	1,521	117,649	498	..	723	3,329	9,064	2	15	1	12	1
Canada	7,112	8,118	1,205	157	153	23,347	217	..	104	33	664	5	28	..	..	38
Columbia, about	21,000	8,500	2,500	150	250	20,000	1000	..	500	400	2,500	300	100	200	..	60
	46,063	52,749	8,432	471	1,924	160,996	1715	..	1327	3,762	12,228	307	143	201	12	99
1837.																
York Fort.....	38,786	85,658	8,744	1746	21,790	695,624	5656	..	4558	24,639	15,614	6520	2039	547	6591	182
Moose Fort	17,191	46,856	4,390	155	632	97,925	779	..	821	5,666	8,713	7	6	7	9	1
Canada.....	6,950	14,654	1,300	36	139	27,000	328	..	236	82	1,423	4	21	..	..	102
Columbia, about	20,000	9,000	1,500	210	300	18,000	800	..	500	1,500	2,000	500	100	200	..	300
	82,927	156,168	15,934	2147	22,861	838,549	7563	..	6115	31,887	27,750	7031	2165	754	6600	585

The Company also imported beaver-coat to the amount in the last year of 304 lbs.; castorum, 2788 lbs.; isinglass, 2684 lbs.; sea-horse teeth, 461 lbs.; bed-feathers, 16,641 lbs.; goose and swan quills, 1,259,000; oil, 26 tuns.

* Ships not arrived this year.

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The value of furs, which are mostly articles of luxury, varies in an extraordinary manner with the changes of fashion. Mr M'Culloch, on good authority, states that the price fluctuates in the course of a single year from 100 to 300 per cent.; and we are assured that this range is often exceeded. The following has been obligingly furnished to us by the Company as the average prices of each description in the sales of 1836, which are considered as affording a good general idea of the course of the trade :—

Beaver, parchment, per skin,	£1	12	6	Fox, kit,	£0	3	0
..... cub,	0	12	3	Musquash,	0	0	6
..... coat, per lb.	0	12	0	Bear,	0	18	6
Martin, per skin,	0	15	6	Fisher,	0	14	9
Otter, sea,	9	10	0	Lynx,	1	0	0
..... land,	1	3	6	Mink,	0	2	6
Fox, silver,	10	0	0	Wolf,	0	6	4
... cross,	1	12	6	Wolverine,	0	5	9
... red,	0	10	0	Badger,	0	3	0
... white,	0	9	0	Swan,	0	6	6
				Racoon,	0	2	9

The following view of the shipping and the official value of the trade for a series of years, is compiled from the Colonial Tables for 1834 :*—

Years.	Shipping.				Exports.		Imports.
	Inwards.		Outwards.		British and Irish Produce, &c.	Foreign produce &c.	
	Ships.	Tons.	Ships.	Tons.			
1825	...	...	...	...	11,294	2415	35,902
1826	...	...	...	...	18,421	2172	44,191
1827	2	673	3	866	23,149	4188	51,171
1828	3	832	4	1046	35,119	4932	54,960
1829	3	866	3	1274	60,036	7815	60,522
1830	1	322	3	769	81,899	8244	32,857
1831	4	1266	3	915	49,653	6207	66,672
1832	3	886	5	1707	36,326	4144	39,378
1833	...	...	2	673	31,890	2806	7,173
1834	5	1551	3	878	48,209	6058	64,225

* P. 115-122.

Columbia, about	20,000	9,000	1,500	210	300	18,000	800	..	500	6115	31,897	27,750	7031	2166	754	6800	585					
	82,927	156,168	15,934	2147	22,861	838,549	7563	...														

The Company also imported beaver-coat to the amount in the last year of 304 lbs.; castorum, 2788 lbs.; isinglass, 2684 lbs.; sea-horse teeth, 461 lbs.; bed-feathers, 16,641 lbs.; goose and swan quills, 1,229,000; oil, 26 tuns.

Ships not arrived this year.

CHAPTER III.

On Emigration to the British North American Colonies.

Advantages of Emigration—Classes of Emigrants—Prospects of a Settler in the middling Rank—Choice of Land—Situations best suited for him—Estimates of Expenses and Profits—Outfit required—Modes of obtaining Credit—Terms of Government and the Companies—Emigration of Half-pay Officers—Of distressed Farmers—Of Persons of Capital—Of labouring Settlers—Advantages of their Situation—Their means of purchasing and clearing Land—Pauper Emigrants—Parties sent out by Government—Military and Naval Pensioners—Plan formed by Mr Buller—Observations—Conveyance of the Emigrant—Modes and Expenses of Passage—Of Journey into the Interior from Quebec—From New York—The Canada and British American Land Companies—Comparison between Canada and the United States—Observations on Lord Durham's Statements—Numbers of Emigrants for the last Seventeen Years—Quarters to which they went—Emigration to Nova Scotia—New Brunswick—Prince Edward Island—Newfoundland and Hudson's Bay.

Emigration obviously gives birth to the most important of the relations which subsist between Great Britain and her North American colonies; and without entering into any abstract views on the principle of population, we cannot hesitate to consider it as a process which, for many years and even ages, must be mutually beneficial. Britain can conveniently spare every season not less than 50,000 or 60,000 of her inhabitants, retaining a sufficient number for every useful purpose, and with much advantage to those who remain behind. The adventurers, too, will form on the other side of the Atlantic a great and flourishing people, imbued with the laws, letters,

manners, and all the acquirements which have raised their native country high among the nations. A portion even of our superfluous capital, which sometimes seeks employment in distant and even chimerical objects, might be very advantageously invested in the culture and improvement of those valuable colonies.

Admitting, however, the national benefits of emigration, it remains a very important question, what are the individuals or classes to whom it affords advantages sufficient to compensate for leaving their native land; and what course they ought to follow in order to realize these benefits. This is a point on which the reader may reasonably expect us to throw some additional light; and we can in truth assert, that we have considered it as anxiously as if all our own prospects had been involved in its solution. To arrive at any fixed conclusion, however, has been by no means easy. The materials are ample; but they are furnished by individuals usually more or less prepossessed on one side, and in many instances incapable of expressing their ideas with precision, or even of forming any distinct or decided opinion on so perplexed a subject. We have endeavoured, however, by carefully collating opposite statements, by making allowance for the obvious partialities of different writers, by fixing upon ascertained facts and points in which all parties agree, to draw up for the intending emigrant a reasonable view of what he may expect to meet with in the settlements beyond the Atlantic.

The individuals who usually migrate into that new region may be divided into two classes,—those belonging to the labouring order, and those who seek to support themselves in the middling rank of society. The former go in the view of obtaining each a spot which he can cultivate with his own hands, subsisting chiefly on its produce: the latter hope, by the application of skill and capital, and by engaging the aid of others, to carry on operations on a larger scale, and to draw from their property a portion of the conveniences and even elegances of life. The former comprise the more extensive, and

indeed the more important branch of the subject; but as the latter will lead us to view it under a greater variety of lights, we shall most conveniently direct our first attention to it.

No one, who has made any observation on the present state of this country, can have failed to observe the extreme difficulty which the middling classes find to support their place in society, and particularly to enable their sons to succeed them in stations of well-remunerated employment. The reduced scale of the army and navy, and the rigid economy now introduced into all the departments of the government, have withdrawn many former sources of income. Manufactures and trade, even when prosperous, can be carried on with advantage only on a large scale, with low profits upon an extensive capital. Hence there remain only the learned professions, with the officers and clerks employed by banks, insurance companies, and similar establishments; and, in these pursuits, the increase of population and the number thrown out from other occupations cause an eager competition. This is increased by the general diffusion of information among the inferior classes, many of whom, by merit and address, compete successfully for these higher appointments,—a state of things which may be, on the whole, advantageous, as securing for national purposes a greater degree of talent; but it obviously increases the pressure on the middling ranks already severely felt.

Among the numerous young men, however, thus languishing for want of employment, there are probably not a few who possess or could command a small capital of from £500 to £1000, and who have the degree of judgment and industry requisite to superintend the labours of agriculture. It becomes then an interesting question, whether Canada affords the means of attaining that independence, and earning those conveniences, which their native country denies to them. On this subject, and every thing connected with it, a great variety of opinions prevails; but on comparing all together, we shall state grounds for concluding that, with

a due degree of skill and perseverance, the emigrant in this rank will find the means, not indeed of rising to wealth, but of placing himself in a comfortable and independent situation.

The cultivator in Canada stands in very different circumstances from either the proprietor or farmer in Britain. He obtains an estate in full and perpetual property for a smaller sum than the annual rent which he would here be obliged to give for it. After paying this price, however, he must expend at least three times as much in clearing and bringing it into a state of cultivation. Even then it will not yield him rent; it will be merely a farm for him to cultivate, with the very important advantage indeed of its being wholly his own, and no landlord to pay. The taxes also are extremely light, when compared to those which press on the English farmer. But in return for these benefits, he must give to his servants considerably higher wages, and will even have no small trouble in procuring them on any terms. What is worse, he obtains for his produce much lower prices, and even these with difficulty, because the supply of grain and provisions in a region so wholly agricultural must more and more exceed the demand within the country itself. These commodities, indeed, will always find a market among the dense population of Britain, to which they are now admitted on payment of easy duties; and, in point of fact, the price must be finally ruled by what they will sell for here. After paying the expense of transportation across the Atlantic, added to that of conveying them from the place of production to the ports of Montreal or Quebec, there is little prospect that the finest wheat of Upper Canada will permanently bring in this country more than 50s. per quarter. Deducting the duty, 5s., freight, 10s., carriage from even a favourable situation in the interior, 8s., we have only 27s., or about 3s. 4d. per bushel left to the cultivator.

Under these circumstances, it has become a prevailing opinion, and maintained by many as an indisputable

maxim, that a Canadian proprietor cannot cultivate with advantage by means of hired servants, but must himself perform the full task of a common labourer. Those only are represented in the way of well-doing who have constantly in their hands the axe or the plough, whose ladies are seen milking the cows, churning, and performing the humblest menial offices. We must frankly say that, if such be the necessary lot of a settler in Canada, we cannot but concur with Captain Hall in thinking it unfit for the class now under consideration. Can it be supposed that a young man, accustomed to refined society, should renounce friends and country, and remove to a remote land, not to improve his condition, but to reduce himself to the level of a common labourer? How can he expect a fair partner, accustomed perhaps to value somewhat too highly the immunities of a refined society, to share with him so hard and humble a lot? We most readily admit that the labouring classes have within their reach the best blessings of life, and are often happier than those called their superiors. Still the desire of exemption from bodily toil, and of enjoying a portion of the conveniences and elegances of life, is natural, and has a salutary effect in stimulating to activity and invention. The lively author of the "Backwoods," a zealous advocate of the working system, admits the hardship of a young gentleman, employed "to chop down trees, to pile brush-heaps, split rails for fences, dressed in a coarse over-garment of hempen cloth called a logging-shirt, and a Yankee straw hat flapped over his eyes." We cannot help thinking, that this ingenious lady is somewhat too severe on those of her own sex who, without her internal resources and powers of reflection, could not accommodate themselves to the hard and dreary life consequent upon this system. In short, we may observe that if land in Canada will pay nothing but the mere manual labour put upon it, it is fitted only for the peasant settler, and can never afford an income for a person of better rank. This opinion

seems confirmed by the judgment of the learned lady herself, when, after an experiment of three years, she concludes, that for a gentleman a small income is almost indispensable,—a good one desirable; this last a case not very likely to occur.*

Notwithstanding these weighty authorities, we do not hesitate to assert that in farming on such a scale as will remunerate a person in the middling rank, his devoting himself to constant bodily labour is not only unnecessary, but decidedly injurious. It is admitted, we suppose, that, in our own country, upon an extent of 150 to 200 acres, the tasks of planning, arranging, inspecting, and finding a proper market for the produce, afford very full occupation to a single individual. But in a Canadian farm, all these operations are much more arduous and difficult. The business cannot be reduced into the same fixed routine; a greater variety of produce, both in grain and live stock, must be reared; servants, less steady, and oftener changed, require much stricter superintendence; markets are not found without more difficulty, and at a greater distance. To perform all these functions carefully and well, on a property of this extent, must, we apprehend, keep the owner's hands very full. To attempt to combine with them the daily task of a common labourer, seems to ensure their being executed in an imperfect and slovenly manner, and consequently the whole concern greatly mismanaged. The newly-arrived emigrant is indeed told that the other is the approved mode, and that if he wishes to thrive in the country he must follow its customs. The fundamental principles of rural economy, however, cannot be changed by the interposition of the Atlantic. The original settlers in Upper Canada were mostly of the less opulent class, who could cultivate their lots only by the labour of their own hands. A few of them, who, by extraordinary exertion, have risen to some degree of wealth,

* Backwoods of Canada, pp. 178-184, 282. Shirreff, p. 348. Talbot, vol. ii. p. 241. Hall's Travels, vol. i. p. 323.

retain still probably their primitive habits and maxims, and represent their success as connected with the hard personal labours which they then underwent. These are held forth as the models to be followed by the young cultivator. But a general rule cannot be founded on a few cases where peculiar energy and activity were displayed. With an average allotment of these qualities, such as we are generally entitled to expect, the union of the intellectual and directing with the manual and operative department can rarely succeed. We are convinced that a person of competent judgment, devoting himself wholly to the former, would raise on the same ground a considerably larger produce than one who, exhausted by daily toil, should follow only in a rough way the mechanical routine observed among his neighbours. He would thus create a surplus applicable to his own profit; and we are convinced that it is only by the exertions of such a class that any improvement can be expected in the system of Canadian culture, which is admitted on all hands to be at present exceedingly defective.

In estimating, however, the plans and views of such a settler, several circumstances must be taken into consideration, and, in particular, the situation of his property. The Canadian districts are classed under two heads. The first, called *the Bush*, comprehends those situated in the depth of the forest, where towns and markets are distant, and reached only by roads which are almost impassable. To compensate the obvious disadvantages of this locality, settlers obtain a greater choice of good land at a considerably lower rate; a party of friends or neighbours can cluster together; and they have every prospect that sooner or later the communications will be much improved, that villages will spring up in their vicinity, and their estates be thereby raised in value. These considerations may justly weigh with certain classes of emigrants, but for those now under consideration they are far overbalanced by the disadvantages. In such a position, there is much greater difficulty in procuring hired labour, while its price must be higher, because the workmen

are not only fewer, but more generally aim at having land of their own. Hence the expense of clearing ground in the several districts has been stated as differing to the extent of £2 an acre; and while the cost of raising the produce is thus augmented, its price or money value is greatly diminished. Cash indeed is scarcely ever seen in the remoter parts. It may at first view seem singular that there should be abundance of commodities worth money, and yet not able to procure it; but we may observe, that gold and silver will purchase any thing in every quarter of the world, while the products of a landed estate are of value only on the spot; the merchant, therefore, may give goods produced in the same vicinity, but he cannot give money. Connected with this want is the impossibility of procuring many of the elegances and luxuries of life, portions of which have by the middling ranks come to be viewed in the light of necessaries. Mr Pickering mentions that tea, when sold at Buffalo, cost 4s., at Port Talbot 6s. per lb. Salt at the former place was 9s., at the latter £1, 2s. 6d. a barrel. The settler may have plenty of food and homespun cloth, but almost every other commodity will be beyond his reach. These observations are not indeed to be understood in their utmost rigour, for in every district a certain amount of money, or at least of foreign articles, may be obtained in exchange for the surplus produce. The merchant, however, in fixing the value, makes a large deduction on account of the long and difficult conveyance; and besides, as he carries on trade on a small scale and without competition, he exacts high profits, and has the farmer a good deal at his mercy. Commercial transactions in all the country districts of America are usually carried on by an individual named a storekeeper, who keeps an assortment of all the commodities likely to be wanted, and receives in return the produce of the cultivator. This mode of proceeding still farther supersedes the necessity of employing cash as a medium of exchange.

Compared to the various disadvantages now stated, the gentleman settler, who must take with him a cer-

tain amount of capital, ought not to regard even a considerable difference in the price of the land, because, as already observed, it forms the smallest part of the outlay requisite for bringing it into a productive state. With regard to the contingent expectation of a future rise in value, this can only take place upon the low original price, and therefore can never be of very great amount. Besides, along with the general advance of the country, the settled districts, and those in the vicinity of towns, will acquire also an additional value. At all events, a rise in the land is of little importance to him, if it ceases to be his,—an issue to which a long course of heavy expenses and scanty produce is very likely to lead.*

We have thought it the more necessary to dwell upon these considerations, as they seem to have escaped a large proportion of the opulent settlers recently attracted towards Canada. Under the influence of vague and speculative hopes, they have made it their ambition to plunge into the extreme west and the heart of the bush, and seem to have imagined that the farther they placed themselves beyond every vestige of culture and civilisation, the greater advantages did they secure. A letter in 1834 states that almost all the emigrants of capital were hastening to the London District, a territory perhaps the most decidedly woodland of any in Canada. Settlers in these wilds encounter peculiar and extreme hardships, being deprived of every accommodation to which they had been accustomed, sometimes even in want of common necessaries, and in danger of starvation. At different times pork, flour, or tea are wanting, when the weather cuts off all communication with the store; and the ox-wagon, in travelling thence with supplies, is often so shaken that the contents are strangely mingled. Rice, sugar, currants, mustard, are jumbled together; and the next pudding perhaps proves to be seasoned

* Shirreff, pp. 363, 380-387. Backwoods, p. 211. Pickering, p. 75. Counsel for Emigrants, pp. 39, 43, 62, 81, 95.

with pepper, and even rappee. However, while their money lasts they can make their way, and clear a certain portion of land, which yields in plenty the rude necessaries of life. But they have no means to recruit their exhausted purse, or secure any supply of the comforts and elegances to which they had been accustomed. If, in anticipation of prosperity, they have incurred any extent of pecuniary obligation, their situation becomes extremely embarrassing, and may issue in the entire loss of their property.

Important, however, as a marketable situation appears, it ought by no means to be procured by any great sacrifice as to the quality of the land; for, as Mr Talbot justly states, it is vain for a cultivator to be near a market if he has little or nothing to carry to it. It has been already mentioned, that after paying the original price, a much larger sum, nearly equal in every case, must be expended in bringing the land under cultivation. Thus there is little difference between the cost of good and bad soil, while the former only, under existing disadvantages, ever can remunerate the settler. It is a grievous thing, as Mr Shirreff observes, to incur heavy labour and expense in clearing a spot, and then find it worth little. The settler, therefore, who brings with him a certain amount of capital, practises a most wretched economy when he hesitates to pay such an original price as will secure both a good situation and good land. If a small sacrifice must be made, it should rather be on the former. A larger produce will pay for a small addition on the cost of transport, and time may remedy the one evil, but will never make a bad soil good. Some sacrifice of this kind may often be necessary; since, as Mr Fergusson remarks, on the immediate banks of lakes and rivers it is not unfrequently light and sandy, whence arises the necessity of going somewhat into the interior in order to find the more valuable description.*

In consequence of the views now stated, it becomes a

* Backwoods, p. 124. Shirreff, p. 171. Fergusson, p. 270.

highly important question what are the market or *cash* districts (as they are sometimes called), in contradistinction to those in the *bush*. In regard to Canada, the topographical details already given must throw important light on the subject; and to these some general observations shall now be added. The shipping ports of Montreal or Quebec form the central points, by proximity to which the advantages of all sites in either province are to be estimated; and next to this is a location on navigable waters having a ready communication with them. The banks of the St Lawrence between these two cities are occupied to a considerable depth inland by the French seigniories. Land, however, in the vicinity of Montreal may still be procured, having the advantages of a ready market; but from this very circumstance it cannot be purchased under a price varying from £10 to £20 an acre, a rate beyond the reach of most emigrants. It may be rented indeed at 10s. or 12s., and Mr Shirreff is of opinion that farming may there be carried on with advantage; but in a country where land may be obtained in full property at so cheap a rate, the British settler is not likely to be content with this dependent tenure.* His object, therefore, must be sought somewhat farther in the interior.

The parts of the Eastern and Johnstown districts along the bank of the St Lawrence enjoy perhaps the best situation as regards proximity to market of any in Upper Canada; and their advantage in this respect will be further improved on the completion of the canal now in progress for overcoming the obstructions in the navigation of that river. This tract, however, labours under the very serious drawback of being decidedly inferior in soil and climate to the more western territories. The former deficiency, it is true, will appear from our topographical survey to be by no means universal, the idea having been in some measure suggested by the rugged aspect of the immediate banks. Matilda and other districts appear to contain a considerable extent of fine land yet unoccupied.

* Shirreff, p. 354.

The climate operates chiefly to prevent the raising of wheat so fine as to bear the cost of transportation to Europe; but this is of less moment since live stock has begun to be considered the more profitable branch. On the whole, therefore, we incline to think that settlers of capital, in their eagerness to push westward and into the bush, have bestowed too little attention on this portion of territory.

The banks of the Ottawa on both sides as far up as Hull, and including those of its tributary the Rideau, appear to possess similar advantages. Some demand for produce is also made by the lumberers who pass to and from the upper tracts on this river. The soil and climate seem to call for nearly the same observations as have been made on the two preceding districts.

The shores of Lake Ontario, including a space varying from ten to twenty miles inland, afford good scope for a settler of moderate capital. This territory, though not uniformly fertile, contains a large extent of excellent soil with a comparatively mild climate, and as the rigorous season is shorter, winter wheat even of fine quality may be produced. Toronto and Kingston, now considerable towns, present a ready market, through the medium, too, of respectable merchants, who are known to deal on liberal terms. The river Trent and the Rice Lake might perhaps be viewed as enlarging the sphere of eligible settlement somewhat beyond the limits now stated, but we could scarcely recommend to a gentleman to go far beyond Peterborough. The vicinity of the city first mentioned, and the goodness of the road called Yonge Street, may indeed carry the range a little farther in that direction; though we doubt whether it would be advisable to go to the remoter shores of Lake Simcoe. Gore District, when it passes Burlington Bay, must, we suspect, be considered as mere bush.

Beyond Ontario, the shores of Lake Erie, even since the completion of the Welland Canal, cannot be recommended without some hesitation. The distance from

Montreal becomes great, and as the goods could scarcely be conveyed without transhipment, the tolls of three canals must be paid. At all events, it is only the lands closely adjoining this great lake that appear to afford a profitable site for the more opulent settlers; for the interior of the London District, including even the banks of the Thames, must still, we suspect, be classed with the bush-territory. Mr Shirreff found that wheat bore a very low price there, and that it was moreover difficult to be procured. The shores of Lake Huron must also be included under the same description.

It ought, however, to be observed, that these limits may be considerably modified by the great works mentioned in the commercial chapter as being contemplated for extending the communications of Upper Canada. These unfortunately are now at a stand for want of means; but if the plans of Lord Durham be carried into effect we may hope to see them all accomplished on an augmented scale.

It will be proper to consider under this view the Eastern Townships of Upper Canada. Their situation is peculiar, owing to the banks of the St Lawrence and of the Richelieu being occupied by the French seigniories, having a tract of inferior ground in their rear. The townships are thus thrown much inland, and their products can be brought to market only by a land-carriage varying from 60 to 120 miles. The roads too have hitherto been bad; but the British American Land Company have been employed in making a very good one from Port St Francis to Sherbrooke, and in improving the others. The evil also is much mitigated by the circumstance that cattle, which form the main staple of this territory, can convey themselves to market, and, even if killed, the salted meat contains much more value in the same bulk than grain. Yet we should hesitate in advising settlers of the more opulent class to proceed farther than Melbourne and Shipton on the side of Port St Francis, or beyond Shefford if proceeding from Montreal. Here they will find good land, which,

when the promised improvements are completed, will not be much more than fifty miles from a port on the St Lawrence. With regard to the other colonies, every thing connected with emigration will be treated separately at the close of this chapter.

Several individuals well acquainted with Canada have formed estimates of the profit likely to be secured from cultivating a farm in that country, and although these calculations do not possess the precision which could be wished, it may be advantageous to notice them before producing one, which we shall attempt to found on data generally admitted even by conflicting parties.

Mr Talbot, who for five years carried on farming operations in the London District, has given an outline which rests apparently on his own experience. He supposes that out of 500 acres 100 are cultivated; and assuming that three servants will be necessary, he reckons that forty acres well managed will raise food for them and a family consisting of eight members. Of the remaining sixty he considers that the same number may be laid out in wheat yielding twenty-five bushels an acre, which, at 2s. 6d., will produce £125. He allows nothing for the remaining twenty; but to this we shall not object, as twenty-five bushels an acre is perhaps a liberal allowance. The wages of the three servants would amount to £90, leaving £35 for clothing and other supplies; from which premises we are surprised to find him drawing the conclusion, that it is as well to leave land uncultivated as to work it by means of hired labour.* From the hundred acres thus improved he has derived a plentiful supply of food for a family of eight persons, besides a surplus in money. The latter is no doubt very small; but we may observe that the calculation is founded on the returns of a bush farm in the London District, and consequently supposes wheat worth only 2s. 6d. per bushel. If we substitute 3s. 4d., which we have shown will, in all probability, be the minimum in a better situ-

* Vol. ii. pp. 240, 241.

ation, we shall have an addition of £41. With the difficulties of the same position there seems connected the impossibility of cultivating more than a hundred acres; but if we add thirty-five, eight of these will be a large allowance for the food of the man and labouring cattle employed on it. Then, according to his estimate, two-thirds of the remainder, or eighteen acres, would produce 450 bushels of wheat, which, valued at 3s. 4d., would amount to £75. Allow £30 for the man's wages, and there will remain £45, which added to the £35 and the £41 makes £116; a very adequate provision where the ground yields food, the forest supplies fuel and materials for a habitation, and where the female members of the household may be expected to fabricate some portion of clothing.

Mr Pickering, an experienced farmer, who spent some time in Canada, has formed another estimate, presenting the subject in a much more flattering light, on which, however, we cannot advise the emigrant to place full reliance. He supposes that a settler shall purchase a farm of 200 acres, seventy of which are cleared, and that the work is to be all performed by contract, which, with seed and other expenses, will amount to 563 dollars. The produce he states as follows:—

Twenty acres of wheat, 18 bushels per acre, sometimes 30, at ¾ dollar per bushel,	270
Ten acres of clover seed, at 2 bushels per acre and 7 dollars per bushel,	140
Six acres of Indian corn, 25 bushels per acre, 150 bushels at ½ dollar,	75
Thirty store pigs for fattening next season,	30
Thirty fat hogs, weighing at least 200 lbs. each (or 1 barrel), 30 barrels at 12 dollars per barrel,	360
Six cows, butter and cheese for summer,	60
A yoke of fat oxen 60 dollars (besides a cow or two killed for the house),	60
Twenty lambs, 20 dollars,—20 fleeces, 20 dollars,	40
Geese,—feathers,—eggs,—fowls, &c.	10
One year's farm produce,	1045
Ditto expenses,	563
Surplus, dollars,	482

Mr Inches having with the utmost severity attacked this estimate, substituted another which wears indeed a

very gloomy aspect. Unfortunately his calculation, as well as Mr Pickering's, is rendered extremely complicated by his including the original outfit on a farm partially cleared, whereas the object of our inquiry is to ascertain what the settler's permanent situation will be, after his land has been brought into regular cultivation. As the cost and difficulty of the first establishment will be made a separate question, we shall throw out every charge on both sides that is not strictly annual. Mr Inches insists that the expenses will not be less than 1007 dollars, nor the produce more than 276, creating to the farmer a loss of 731 dollars. But it is manifest that, though he has succeeded in cutting down several of his opponent's items, he has in many of his strictures gone greatly too far.

In regard to the outlay, he reprobates the system of doing every thing by contract as inconvenient, precarious, and even impracticable, and decidedly prefers that of hired servants. But he certainly proceeds beyond the proper limits when he requires four labourers, including the owner and an able-bodied son (whose wages too are charged as expenses), upon a farm of 200 acres, and that partly under sheep pasture. According to every other estimate which we have seen, two men would be sufficient, being considerably more than are employed on the same extent of land in England. Mr Inches insists that 150 dollars must be expended for corn and hay to cattle, not adverting to the fact that Mr Pickering has devoted to this purpose four acres of grain and eight of timothy grass, for the produce of which he makes no money claim. Throwing out, for the reason above stated, the girdling of trees and the interest on purchase-money, as temporary expenses, we shall, on comparing together the two statements, attempt to substitute the following :—

	Dollars.
Seed (Mr Pickering), . .	53
Tear and wear of stock (Mr Inches), .	30
Salt, ...	10
Wages of two men, ...	228
Their board, . . .	146
	467

The estimate of produce is treated by Mr Inches with still greater severity; but unluckily his chief arguments are founded on the peculiar case of a settler entering on a new farm, and on the improbability of his finding it in a desirable state of preparation. This hypothesis, it is obvious, limits the question to a single year. On future occasions the colonist will have the means of arranging these matters as he judges best; and proceeding on this ground, we may remark that wheat seems not too highly rated at 3s. 4½d. a-bushel, while the produce of eighteen bushels for land fully cleared and in good order is very moderate. We shall not, therefore, disturb these items. The clover-seed is a very odd article, and nothing that we have met with elsewhere could give an impression of its being a Canadian staple; but we cannot by any means concur with Mr Inches in sweeping it away altogether, and treating the ten acres as if they had been lying waste. Even on his own view, the outgoing tenant would surely leave them sown or planted with something; and, therefore, we are entitled to assume a produce of at least 100 dollars. The thirty store-pigs are justly rejected as not being saleable produce, though fitted to become marketable stock next year. As to the thirty fat hogs, it is insisted that time has not been allowed for their growing to so portly a size,—a statement which can only have reference to the particular season. The allowance of food for them, however, seems scanty, being only 200 bushels of pease, which gives about six to each hog, while Mr Pickering himself considers ten necessary to fatten one, and to keep it through the winter. He adds, no doubt, that these animals get their living in the woods and pastures during the summer, and also during the rest of the year when nuts are plentiful, which sometimes happens; still this vague contingency does not seem to justify him in allowing only one bushel for winter food. We suspect that on the average eight bushels for feeding and fattening is the lowest that can be reckoned, and hence the number of hogs must be reduced to twenty-five. Mr Pickering's own autho-

rity in another place is then quoted for making these animals produce only 166 lbs. instead of 200; for though the latter is generally stated as the weight of the Canadian hog, yet as a good deal must be rejected in making up a barrel of prime pork, the former seems a fair estimate. Lastly, it is maintained by this agricultural critic, that salted pork, instead of 12 dollars, brings only $9\frac{3}{4}$; and allowing for the expense of conveyance, we doubt if more than 10 can be safely reckoned upon. The value of this article therefore will, on these grounds, fall from 360 to 200 dollars. Mr Inches strenuously rejects the 60 dollars for feeding and fattening; yet, as in ordinary years six calves must be produced, while twelve acres of oats and grass, with a portion of vegetable ground, are allowed for fitting them for market, it seems fair to allow, that this return may in some way or other be drawn from the cattle. The corrected estimate will then stand thus :—

	Dollars.
Wheat,	270
Ten acres clover or other crop,	100
Indian corn,	75
Pork,	200
Four last articles,	170
	815
Expenses,	467
	348

Or about £70.

This is a small income, even with the addition of a slender allowance of beef and vegetables; but the extent of land appears much too limited for the mode of culture which we are now considering. The produce too of 12 acres in sheep pasture seems very miserable, being only 40 dollars, or about 17s. per acre. If the produce cannot be considerably increased, the ground ought to be applied to some better purpose.

Mr Fergusson has lately transmitted an estimate, which on other grounds represents Canadian farming under a very flattering light. He supposes a settler going out with £500 sterling, or £600 currency, to purchase

200 acres, for which he pays £200. He then traces his career in a manner which, though given somewhat at length, we shall copy, as it includes many instructive details.

FIRST YEAR.

The purchase-money of 200 acres, at 4 dollars, or £1 currency per acre,				£200	0	0
A log-house,				50	0	0
Some furniture for log-house,				20	0	0
Barn, including stable and cow-house,				50	0	0
Household and other expenses till after harvest,				30	0	0
Clear, fence, and sow 50 acres with wheat at £4 per acre,				200	0	0
				£550	0	0
On the 50 acres of wheat he will have 25 bushels per acre, which, at 4s. 6d. per bushel, is				£281	5	0
Deduct expense of harvesting,	£35	5	0			
Household and other expenses,	46	0	0			
				81	5	0
Clears the first year,				£200	0	0

SECOND YEAR.

He expends this year as much of the £200 as will clear 37½ acres more, which, at the same rate as last year, will be				£150	0	0
The other £50 he has for purchasing a team of oxen, and household expenses till after harvest,				50	0	0
				£200	0	0

This year he has the original 50 acres and the 37½ cleared this season, all in wheat, the seed for the 50 acres to be debited against the ensuing crop.

87½ acres, at 25 bushels at 4s. 6d.				£492	3	9
Expense of harvesting, &c.	£61	10	5			
Seed, as above, for 50 acres, at 1 bushel per acre, at 4s. 6d.	11	5	0			
Household and other expenses,	39	8	4			
				112	3	9
Clears the second year,				£380	0	0

THIRD YEAR.

All having been hitherto done by contract, there has now to be charged the expense of stocking the farm, and servants' wages and board,	£285	0	0
Wheat seed for 87½ acres, at 1 bushel per acre, at 4s. 6d.	19	13	9
Grass seed for 25 acres, at 3s. per acre,	3	15	0
Assistance during harvest,	20	0	0
Household and other expenses,	52	1	3
	£380	10	0

Has the same crop as last year, but not at so much expense in thrashing, and his own servants assisting.

87½ acres in wheat,				£492	3	9
Assistance in thrashing, &c.	£35	0	0			
Household and other expenses,	37	3	9			
				72	3	9
Clears this year,				£420	0	0

FOURTH YEAR.

He clears 62½ acres more, making in all 150 acres cleared, which is sufficient on a farm of 200 acres.

He this year plants some potatoes, sows turnips, &c. on that part of the 50 acres first cleared not in grass.

To clear, fence, and sow 62½ acres,	£250	0	0
Erects a thrashing-machine,	80	0	0
Builds some houses for feeding stock,	20	0	0
Household and other expenses,	30	0	0
Sundry improvements about the house,	40	0	0
	£420	0	0

Has this year the 37½ acres formerly cleared,
and the 62½ cleared this year,

in wheat,	100	acres at the same rate,	£562	10	0
The other 50 acres valued at			120	0	0
			£682	10	0
Deduct for household and other expenses,			82	10	0
			£600	0	0

At the end of the fourth year he has his farm paid for, stocked, and £600 currency in his pocket.

Could this be realized, farming in Canada would indeed be a mine of wealth; but the golden castle has been assailed by Mr Shirreff, and we fear completely

demolished. Mr Fergusson, it is observed by this writer, has taken four successive crops of twenty-five bushels an acre from the same ground,—a result the expectation of which is quite chimerical. He has made wheat bring 4s. 6d. a bushel, though it has to be conveyed about 100 miles to Lake Ontario, where he admits the price to be only 4s. 3d. He draws a crop from the land the same year in which it has been cleared, though by every account it cannot yield one till the following season. He has forgotten too, during twelve months, either to pay his servants' wages, or to supply food to them or his cattle. With reference to these errors and omissions, Mr Shirreff has formed a calculation, according to which, at the close of the four years, the expenses would have exceeded the produce by £822; consequently the settler, instead of having in his pocket £600, would have been £222 in debt. Enormous as this discrepancy is, the author has so fully made good his point, that we can scarcely find a single criticism to make on his estimate. He has indeed charged the seed wheat at 4s. 6d. when he has shown it to be worth only 3s. 9d.; but, in return, he has forgotten, except in one instance, to supply the charge of 9d. a-bushel for carriage to Lake Ontario. He retains the expense on the thrashing-machine, though he seems to think it useless; while, on the other hand, he has not introduced any equivalent for the omission, in the fourth year, of wages and food. It is to be considered, however, that the settler has been allowed for the support of his family upwards of £300, which, had he been doing nothing, would have gone far to dissipate his small original capital. Moreover, to meet the debt of £222, he has a crop on the ground, which Mr Shirreff does not refuse to estimate at £450,—a sum sufficient to clear off his burdens, and place him in an independent position. That gentleman, accordingly, estimates the land, with buildings, stocking, and furniture, at £750.

Let us now, proceeding upon the data which Mr Shirreff has made to pass through so severe an ordeal, endeavour to measure the annual income likely to be

derived from a Canadian property of this extent. The estimate shall be formed in money, though much of the produce will of course be consumed at home, and a large portion of the surplus bartered with the neighbouring storekeeper. We presume that in fully cleared land, originally good, 22 bushels an acre of wheat alternating with grass may be considered a moderate crop; and, for reasons above stated, we cannot venture to encourage the expectation of a higher price than 3s. 4d. a-bushel. Supposing then that half the ground, or 75 acres, is sown with wheat, we shall have 1650 bushels, value £275

The other half in grass, at the rate claimed by Mr Fergusson and allowed by Mr Shirreff, . 180

The 50 acres left in wood, as they supply fuel, materials for repairs, and food for hogs and cattle, may be estimated at 30

£485

It is observable, that the above method of cropping, which we have adopted in order to avail ourselves of the best authorities on the subject, may probably be varied with advantage, especially in the second portion of the land, much of which may be profitably laid out in oats, pease, and other grain for fattening cattle. Indeed, the opinion is becoming prevalent, that the latter branch is more gainful than the growing of wheat at its present low rate. We have seen, after a sweeping reduction upon Mr Pickering's estimate, that the ten acres of pease employed for feeding still yielded £4, 10s. each, while we value our wheat crop at only £4, 3s. 4d. Upon the whole, therefore, though we should hesitate to encourage the settler to expect more than the return now stated, it may we think be considered a moderate estimate.

We have now, however, to deduct the expenses of cultivation. The heaviest article are the wages of servants, of whom we shall allow four, being more than is usual in England for the same extent of land, and nearly

corresponding with Mr Talbot's allowance of three for 100 acres. The usual wages £27, .	£108	0	0
They have also their board; and though the articles of subsistence are cheap, yet as they must have wheaten bread and animal food twice a-day, we acquiesce in Mr Inches' estimate of 7s. currency per week, or about £16 sterling per annum,	64	0	0
Food for four yoke of oxen and two horses,	37	10	0
Keeping up this stock by purchase or breeding, say	15	0	0
Seed for wheat, 75 bushels at 3s. 4d., .	12	10	0
Seed for grass at 3s. an acre (Fergusson and Shirreff), ...	11	5	0
Wear and tear, double Mr Inches' allowance for 70 acres, ...	13	0	0
Salt for cattle, ...	4	10	0
	£265	15	0
Produce,	485	0	0
Income,	£219	5	0

Thus, reckoning upon moderate prices, and chiefly upon statements made by writers inclined to take an unfavourable view of the subject, we seem to have ground for concluding that a competent income may be earned by the Canadian proprietor. Two hundred pounds a-year, we presume, will, as all the necessaries of life are extremely cheap, be reckoned about equal to three hundred in Britain. Luxuries, such as wine, tea, and coffee, are loaded indeed with somewhat heavy mercantile profits; but having paid scarcely any duty, they are, unless in territories very completely *bush*, still lower than in this country. Imported clothing is higher, but its use may be in some measure diminished by domestic manufacture, of which the materials are cheap; and in a retired situation the necessity for appearing in full dress will be only occasional. The wages

of house-servants are high, yet not such as to reduce the settler to the necessity of dispensing with such assistance; and their labour may sometimes be employed for furthering the operations of the farm.

A young man who desires to form a judgment how far such a mode of life will suit him, must be warned not to carry out the ideas of rank and dignity which are connected with the possession of land in Europe. Here, according to feudal ideas not wholly extinct, it was anciently combined with power; and still, from the large rents paid for its use, it generally confers wealth without labour, the enjoyment of splendour, and luxurious ease. But in America this species of property has never implied hereditary influence; and it yields income, in most instances, only by hard personal labour or an active superintendence. The few wealthy men of which it can boast have acquired their riches by acting as merchants and storekeepers, and these are, on the whole, the persons of greatest consequence in the country.* But though landed estate does not ensure those factitious distinctions, there are important advantages of which it can never be divested. It is attended with a degree of independence seldom enjoyed by the middling classes in Britain; for here, farmers, with a heavy burden of rent and taxes, which they must make good amid many uncertainties, are always liable to come under the power of their landlords. Salaried officers too may be exposed to insult, and even the loss of their situations, through the caprice of employers or superiors; whereas a proprietor in the colonies, if he can draw a subsistence from his lands and keep clear of debt, is scarcely liable to any vicissitude. He is removed indeed from the society of his friends; but this, unless as to occasional visits, is usually the lot of professional men even in our own country, who must accept employment wherever they can find it. Again, he can never return to reside in his native land,—a privation which, to those who have spent the best part

* Shirreff, p. 387.

of their lives abroad, is in a great degree imaginary; and, aided by the improving means of communication, he is not debarred from the possibility of seeing his relations at home. In regard to society in Canada, if he has followed the advice of not going far into the bush, he will find it as good as it is usually met with in the rural parts of Britain, or even in provincial towns.

The foregoing estimates have been made with the view of ascertaining what income may be expected from a Canadian farm, after it is cleared and placed under regular cultivation; but the momentous question, by what means and resources the emigrant is to bring it into this condition, still remains to be considered. It must not be concealed that his task will be arduous; and if he is to perform it, as is here supposed, by hired labourers, a certain capital will be requisite. Two hundred acres of land, of good quality and in an eligible situation, cannot be purchased for much less than £200. He must erect some kind of habitation, though at first a simple one, and have certain farm-offices, implements, and labouring-stock, which will require at least £100. He must also have the means of subsistence till he is able to draw it from his farm; though this, it is presumed, during his noviciate, will be managed with the strictest economy. But the hardest part of the task remains; for the dense forest which covers his ground must be cut down before a single blade can grow upon it. This process, with the addition of fencing and sowing, is averaged at £4 an acre, which, with reference to the requisite space of 150, would amount to £600; the remaining fifty being advantageously allowed to remain in woodland. It is true that this process may be gradual, and that the increasing produce of the improved portions will afford means for clearing the remainder; but as there is also to be paid out of it the subsistence of the emigrant, the expenses of cultivation, and the additions necessary to the stock of the enlarged farm, the improvements must be far advanced before any surplus can be expected.

Mr Shirreff has formed an estimate of expenses and

produce in such circumstances as are now supposed, perhaps the most correct to which we can refer. He calculates that the former will exceed the latter in the first year by £596; in the second, by £686; in the third, by £635; in the fourth, by £822 currency, or about £740 sterling. This is the *maximum* of outlay, and the clearing being then completed, the entire produce, after deducting the expenses of culture, will go into his pocket. Nearly the same result will be obtained by the following view:—

Price of 200 acres,	£180	0	0
Log-house and furniture on the most economical scale possible, at first; barn, cow-house, and yoke of oxen,	100	0	0
Clearing, fencing, and sowing 100 acres,	400	0	0
Subsistence for a year and a half, supposed in the case of a young settler during this probation to be on the most moderate scale, £50 a-year,	75	0	0
	£755	0	0

We suppose that the partially cleared portion will afford subsistence, the expenses of cultivation, and the necessary additions to the stock; and that, when the hundred acres are rendered productive, strict economy being still observed, they will afford a surplus by means of which the settler may improve the remaining fifty.

According to these estimates, £750 is the sum necessary to enable a young settler to pay his way in bringing under culture a property of the extent now specified. As many, however, to whom emigration is desirable, may be unable to command so considerable an amount, it becomes interesting to inquire if arrangements can be made either for procuring advances or delaying payment, till the land is brought into a sufficiently productive state to clear them off. There are three modes by which this may be effected:—1. Credits on the price of the land; 2. Borrowing by mortgage upon it; 3. Obtaining loans from the merchant or storekeeper.

1. In almost all cases when land is sold in Canada, some credit is allowed, with the view of enabling the settler to draw the whole or part of the price from the

produce of the ground when brought under cultivation. Before coming, however, under the obligations required, it will be advisable for him seriously to consider the terms. The granting of land in this colony by government was for a long time an object of gross abuse, large lots being bestowed, from mere favour, upon individuals who were neither able nor inclined to turn them to any account; but Lord Goderich, having formed the laudable resolution to put an end to this system, went perhaps to the opposite extreme. In his letter of 7th March 1831, he directed that land should, in every case, be disposed of by sale, on the following conditions, namely, that one-fourth of the purchase-money should be paid immediately, and the remaining three-fourths at intervals of half a year. If any failure took place in these stipulations, the property was to be forfeited, and resold by public auction,—an arrangement which was confirmed by instructions received from Mr Spring Rice in August 1834.* In the colony, however, these credits seem from the first to have been held as quite nugatory,—it being utterly impossible to make the land in a year and a half yield three-fourths of the purchase-money. In all the notices which we have seen as issued by authority, the interval of a year is allowed between each instalment, so that the whole may be paid at the end of three.† Even these terms appear altogether unsuitable; and we cannot help being surprised that government should have attempted to enforce them, when we find Lieutenant-colonel Cockburn stating that seven years are the earliest date at which the instalments can be paid out of the land.‡ It seems the more to be regretted, as having given the appearance of an official sanction to those delusive reports, spread by sanguine individuals and supported by a few fortunate instances, whence the settler was led to expect returns enabling him not only to subsist, but to pay up in that short period the whole price

* Emigration Papers, printed August 1834, pp. 3, 4, 15.
† Backwoods, p. 328. Shirreff, p. 360.
‡ Report of Select Committee of 1826, p. 148.

of the land. From the most sober statements, and the best authenticated results, we are convinced that the reaping of the fourth crop is, generally speaking, the very earliest period at which an instalment can be paid out of the produce of the ground. It is only a very small portion of his property that the settler can have cleared at the end of the first year; and out of its scanty crops he has to draw his own subsistence, the expenses of the farm, and those of cutting down an additional quantity of woodland. For these purposes it is manifestly inadequate; how, then, can he possibly pay a large sum of money? The demand for a considerable instalment at the outset is reasonable; but when this is made, and an obligation retained on the whole land, which can scarcely fail to receive at least some improvement from the hands of the occupant, the most complete guarantee is provided against ultimate loss.*

We ought, however, to observe, that these regulations have by no means been carried into any rigorous practical operation. On the contrary, it is stated in the last General Report of the Commissioners on Grievances,† that they have never been enforced in a single instance, and that an immense arrear has thereby accumulated. But this fact does not remove the objection. Government fixes terms which cannot possibly be fulfilled, and thus finds itself in numerous instances unable to act upon them. It thereby becomes almost impossible to do so in any case, and advantage is probably taken of this relaxation by persons who are not under the same necessity. "You cannot," says Mr Sullivan, "attempt to eject a whole community."‡ To remedy

* Since writing the above we find our opinion confirmed by Mr Baillie, surveyor-general of New Brunswick, and by Mr Shore, thirty-five years resident there, one of whom considers three or four years, and the other five, as the earliest periods at which an instalment can be expected. Lord Durham's Report, Appendix B, p. 154, § 1716; p. 156, § 1768.

† Printed February 1837, p. 23. See also Appendix B to Lord Durham's Report, p. 113, § 1006.

‡ Appendix B, p. 110.

this the commissioners recommended that lands should be sold only for ready money, which was carried into effect by Lord Glenelg's order of February 1837. The United States had already adopted this system, which was certainly found consistent with the most rapid colonization of their western territory. Their credits formerly were of the same description as those granted by the English government, and had issued in a similar accumulation of large arrears. Still we have seen how important it may be in many cases for individuals who undertake the arduous task of Canadian settlement, which can be profitable only on a somewhat considerable scale, to obtain a certain extent of pecuniary indulgence; and in a country where capital is so scarce, credit can only be procured on high and often ruinous terms. We are not, indeed, disinclined to agree with the committee that the mode of conducting sales on trust, and the collecting of small arrears, is a task extremely ill suited to a government, and should rather fall into the hands of chartered bodies and capitalists, as is actually the case in republican America. Unfortunately the British companies have proceeded on the same erroneous system, exemplified by the ministers of the crown, of which we fear they are reaping the bitter fruits. By fixing, in the first instance, terms which they must depart from in numerous instances, all regularity is lost, and it becomes difficult and invidious to enforce them in any particular case. We are not aware that any fair trial has been given to the method of granting and rigidly enforcing conditions which could really be made good out of the land. We may except the announcement, in June 1832, of grants to poor settlers of fifty acres at 5s. an acre, payable by four instalments, beginning only at the end of three years. This plan was adopted by Sir John Colborne under the pressure of the great immigrations at that period; but Lord Goderich, though he sanctioned it as a temporary measure, expressed a decided aversion to it as a permanent arrangement. Not finding it mentioned, therefore, in the most recent reports, we

cannot encourage any one to go out under such an expectation. Surely there is no reason for confining it to this restricted and almost eleemosynary footing, while credit, as we have endeavoured to show, is often more urgently wanted by those who undertake cultivation on a larger scale.

The Canada Company are somewhat more liberal, requiring only a fifth part to be paid down in the first instance, and the remainder by five successive instalments at the end of each year. This, however, according to the views just stated, cannot be considered satisfactory, for three payments will on this principle be required before, agreeably to our estimate, the first should have become due. Mr Shirreff, accordingly, and other writers state, that the settlers have been to a great extent unable to fulfil their engagements to the Company; and we in fact learn, from undoubted authority, that their arrears are very extensive. It was stated to us, that the directors scarcely viewed them in the light of a debt, and were not at all disposed to press hard on a settler whom they considered as doing well, and making such a progress as afforded a fair promise of ultimate payment. Even when they had formed an opposite opinion, they studiously avoided ejecting him by violent means; but, granting a liberal allowance for what he had done, and putting a sum of money in his pocket, persuaded him to depart. The class, however, of whom we are writing may feel reluctant to place themselves under the power of any body of strangers, however respectable. To avoid this danger, it will be requisite to pay at the outset not only the original fifth, but the first three instalments, taking credit only for the last two, amounting to thirty-two pounds in the hundred. Even this might be some object; though it will be necessary to recollect, that as the settler does not obtain his titles till the whole debt is liquidated, he will of course be precluded from raising money by mortgage on the land.

The British American Land Company have gone somewhat farther. After requiring an original payment of

one-fifth or one-fourth from the poorer settlers, they allow the rest to be cleared by six annual instalments. Still this does not come up to our idea, and as their operations have only commenced, they have not yet had any experience as to the result; but Mr Bruyeres, the secretary, expressed to us his conviction, that the colonists would find little difficulty in making out annual payments so small, were it only by the produce of their personal labour. This of course applies only to the working class of emigrants; and even in their case we question if the Company will not be somewhat disappointed. In that event we have little doubt that they will act in the same liberal manner as their sister association; and hence the settler may be allowed to take credit from them for three of his instalments, amounting to £40 in the hundred.

There remain still the clergy reserves, which are brought into the market on more liberal terms than any of the other lands; for after the preliminary payment, the remainder is allowed to be settled by nine annual instalments. Although this arrangement also proceeds on the absurd ground of supposing that the settler can draw any amount out of his very first crop, yet if he pays three portions of the price, he will still retain *six*, or more than the half, payable at dates when he may reasonably expect to derive them out of his produce. It appears, in fact, that this has been a favourite mode of purchase, and that in about ten years 466,000 acres were sold for £317,000, of which, however, only £117,000 were received.*

Land may be obtained from private proprietors who have purchased or obtained grants of more than they are able to occupy; and such persons are generally willing to give liberal credits, holding a security over the property, which must be improved to a certain extent. They are accused, however, of demanding high prices, in the expectation of their lots increasing in value with the extended cultivation of the country.

* Lord Durham's Report, Appendix B, p. 107.

Another mode of enlarging slender means is by borrowing on mortgage, especially after a partial cultivation has rendered the land more saleable. Good security can be given in Upper Canada and the Eastern Townships, where property is registered and held on clear titles. Money, however, is scarce, and interest of course high. The legal rate is six per cent.; but much more is said to be occasionally demanded. Perhaps an emigrant having friends and a good character at home, might find individuals who would grant a loan on the same guarantee, and even consider it a profitable investment.

A third resource is found in the storekeeper, who in all the country districts of America carries on in the manner already described the whole trade of buying and selling. To obtain a profitable employment for his capital, he is willing to make considerable advances on the security of the crop, and even of the land. This is the most usual mode of obtaining credit; but it is obvious that beyond a very limited extent it must prove dangerous and even fatal. The cultivator who once comes under the power of such a person, finds himself bound to deal with him exclusively, on his own terms, and under disadvantages which may render all his future efforts abortive. Where, however, the settler stands much in need of the means of enlarging his operations, this expedient may be in some degree unavoidable.

From these observations it will be obvious that credit cannot be procured in Canada without difficulty and on high terms. It would therefore be extremely imprudent in the emigrant to undertake the cultivation of land, relying principally on such assistance. It would even be very desirable to carry out with him the sum necessary to pay all his expenses, which we have estimated at £750, with perhaps a little reserve to meet contingencies. If, however, he can muster only £500, it appears that by one or other of the above means he may contrive to extend his resources, till he brings the requisite portion of his ground into a state of productiveness.

Among the inducements to emigration, an assurance is usually held out in the most confident terms, that the settler will be thereby relieved of every anxiety as to providing even for the largest family. To prevent him from going out under any such delusion, we would observe that, for the class at present under consideration, this advantage is to be understood only in a very modified sense. He can certainly give his children employment as labourers on his ground, and after his death the property may be divided among them in small portions; but this, we presume, is not what he would consider an adequate provision. If he wishes to enable them to live in the manner that he himself does and to which he has accustomed them, he must be in a condition at their outset in life to put into their hands a certain sum, the amount of which may be estimated from the above statements. He may, indeed, if they are settled near him, give them much aid in regard to stock and subsistence, and thus lighten their expenses; but unless he can bestow upon them a clear sum of at least £300, they cannot begin the world with any advantage. To do this for several sons requires an accumulation which in Canada is by no means easy, and yet if the necessity for it be kept steadily in view through life, and advantage be taken of every favourable year, it will be found by no means impracticable. In particular, we would notice the occasional occurrence of seasons of scarcity in Europe or America, which raise the prices much above that moderate estimate on which we have calculated. Such in fact has recently been felt in the latter country, and has been experienced from time to time in Britain.

Another important question for the settler is, whether he should purchase a spot of complete woodland, or one that is wholly or partially cleared. The latter, of course, bears a much higher price; but as the former cannot be rendered productive by hired labour much under £4 an acre, good land well situated and improved is fully worth £5. The emigrant, therefore, who carries out

capital, may as well give this sum at once as pay for removing the wood from new land; and besides, he will thereby escape the dreary and harassing task of a first settler, and begin immediately to draw produce from the soil. From embarrassed circumstances or the love of change in many proprietors, a choice of spots, partially at least brought to this condition, may be had in every part of Upper Canada and the Eastern Townships, on lower terms than they could be otherwise obtained. But this course is attended with one danger, which must be carefully guarded against, we mean the chance of imposition, in which many Anglo-Americans are said to be rather unscrupulous. Another evil almost certain is, that from overcropping and the neglect of manure, the soil will be found in an exhausted state. Mr Shirreff, though he derides this fear, elsewhere admits that the robbing system is universal. He urges, however, that the restoration of the most exhausted land is easier than the removal of a dense forest; but the means may not be so accessible, and at all events the expense of this restoration should be carefully calculated. According to Mr Buchan, the manure which ought to have preserved the fertility of the soil, and may now renew it, will be found scattered in unsightly heaps around the premises. But the settler should not rest satisfied with this probability, but take care that it be actually fulfilled.

There is a numerous class of gentlemen settlers, consisting of military and naval officers, who, at the end of the war, were reduced to half-pay. To them, with the ideas of refinement and elegance which they must have formed, the rearing of a family in this country upon £100 or even £200 a-year, is felt as approaching to penury. Emigration is nevertheless recommended to such persons, and is encouraged by their obtaining without payment a grant of land proportioned to their rank and length of service. By the latest regulation, a field-officer who has served twenty-five years receives an allotment valued at £300; twenty, £250; fifteen or less, £200. A captain having served twenty years receives £200; fifteen or less,

£150. A subaltern having served twenty, £150 ; seven, or less, £100. An emigrant of this order enters on his career with superior advantages, having no purchase-money to pay, and receiving annually a certain income in cash, that scarce and valued article ; yet without a small capital, he will find it very difficult to clear any great extent of ground, or draw from it a liberal revenue. At the same time, although he should only be able to improve forty or fifty acres, he may, after paying the expenses of cultivation, obtain abundant food for his family, while the forest will present materials for rearing a suitable habitation, and securing a stock of fuel. Thus supplied with all the necessaries of life, he may spend his half-pay on conveniences and luxuries. Such was the case of the gentleman who reported to Captain Hall, that while in Britain nearly his whole income went for food, he might now spend it all in clothing and other accommodations. We fear, however, that this class, led away by erroneous and extravagant expectations, are sometimes impelled by a spirit of enterprise to plunge too deeply into the bush. Being told, that in order to prosper they must work with their own hands, they seize perhaps with alacrity the axe and the harrow, but, it is feared, without drawing much benefit from this personal toil. A bush life and a peasant's task must be very foreign to the ideas and habits of such a settler. At a distance, they may allure by an aspect of romantic adventure ; but when the novelty is over, and day after day passes in dreary monotony, remote from all the enjoyments and accommodations of civilized life, his situation becomes more and more trying. The wealth expected to be found in the forest proves a chimera ; his extensive property is only a waste of woodland, which he has no means of turning to account ; the price of every thing, except the necessaries of life, is higher ; and his income therefore does not go nearly so far. It would surely be more rational to occupy a smaller spot in a better locality, where he would border at least on the confines of social existence.

The vicinity even of the small towns, especially those northward of Lake Ontario, such as Coburg and Peterborough, afford society such as he has been accustomed to, and the same means of enjoying life as would be found in any retired situation in Britain.*

We have still to notice another case, that of persons somewhat advanced in life, probably with families, who have practised farming, but have fallen into distressed circumstances, or at least are unable to earn a livelihood under the existing pressure of rents and taxes. For them Canada is frequently pointed out as a resource, though without due consideration. Such individuals have been inured to habits and modes of conducting operations very different from those to which they must accommodate themselves in that distant country. Besides, the expense of transporting their families and maintaining them two or three years, till the land becomes productive, is extremely heavy. This class too are often inclined to go into the bush, partly perhaps through an idea of the cheapness of land; and yet, unless their means be so extremely limited as to preclude every prospect beyond a bare subsistence, this course will not only render the change exceedingly dreary, but ultimately increase all their difficulties. The task of cutting down the forest with their own hands must be almost impracticable; on which account, where circumstances at all admit, a spot in an accessible situation, and even partially cleared, ought to be preferred as at once the most convenient and the cheapest purchase. We cannot here omit Mr Shirreff's testimony to his emigrant countrywomen, whom he describes as admirably discharging the duties of their new life, and bearing its hardships with greater fortitude than their husbands.† Here he appears at first view to contradict the authoress of the "Backwoods;" but probably the classes were different. He met chiefly

* Emigration Papers, 1834, p. 13. Hall's Travels, vol. i. p. 333. Backwoods pp. 182-184, 194.

† Page 165.

with ladies who had accompanied their husbands under the trying circumstances above stated, and who, with a feeling of duty and sympathy congenial to the sex, sought to support them under misfortune; while *her* acquaintance was with the wives of officers who had come out under the more illusory expectations of gayety and good fortune.

There remains still another class, small in number, yet gradually increasing, of men who possess considerable capital, and who seek to employ it with advantage. From the scarcity of money profits are high, but great activity, caution, and judgment are requisite in order to secure them. Some have carried on agriculture on an extensive scale. Mr Philemon Wright, for instance, near Bytown on the Ottawa, has cleared 3000 acres, employs 63 labourers, makes 1100 tons of hay, and has 756 acres in grain and roots. The Messrs M'Donell of Gananoqui, too, cultivate a farm of 1200 acres; and these examples seem sufficient to refute the assertion of some that in Canada farming cannot be undertaken unless on the very smallest scale. At the same time the circumstances already mentioned will render it difficult, and in most cases impracticable, to go beyond the extent on which our calculation was formed. A large capital with a view to procure wealth must be employed chiefly in mercantile transactions. In the cities such business is conducted nearly as elsewhere; but in the country it is almost wholly carried on by storekeepers in the manner formerly described. The smallest capital on which a store can be advantageously set up is stated at £1000. The profits are generally understood to be very large; but as they are obtained by numerous transactions, often with embarrassed individuals, they are not realized without difficulty and under disagreeable circumstances. Those rude manufactures, which from their bulky commodities must be practised on the spot, appear to afford an advantageous return. These are chiefly flour and saw mills, distillery, brewery, and of late iron works. The purchase of large blocks of land and the retailing it

out to smaller settlers may yield an ample profit, but it is an occupation which requires much attention and care. High interest may be obtained for money, and much more than the current rate is often received in the way of mortgage from landed proprietors; but here, too, great circumspection is necessary.*

It is now time to consider the case of the more numerous division of labouring or *peasant* settlers. This last term is not here used in its ordinary English sense to express the lowest grade of rural labourers, but in the acceptation which it bears on the Continent, where it indicates a class of small proprietors tilling the ground with their own hands. Such persons are common in the northern countries, and in Sweden form even an order in the state. Such in Scotland, too, were the little *lairds*, once numerous, and not yet wholly extinct; such probably in England were the body called yeomen. In a crowded and continually increasing population of twenty-four millions there must be many individuals to whom this situation, accompanied with independence and abundance, may afford a most favourable change compared with their present condition. Small working farmers, formerly to be seen in all the mountainous tracts of Scotland and England, and still in most parts of Ireland, can no longer make head against the improved class employing capital on a great scale. In the latter country the desire to have a piece of land has reduced the size of farms till the occupant can with difficulty obtain a miserable subsistence out of the meanest portion of his produce. Young men of various ranks, having from £100 to £200, may wish to raise themselves above the order of common labourers, yet cannot in this country turn it to such an account. Tradesmen and artisans, too, of a higher description may by the severe pressure of competition be able to earn only a scanty and precarious livelihood. Even in the common class of workmen, an

* Picken, p. 307. Fergusson's Second Journey. Shirreff, p. 387. Counsel for Emigrants, p. 63. Backwoods, p. 179.

aspiring lad, conscious of the energy and perseverance necessary to encounter many difficulties, may find his condition improved on the other side of the Atlantic. Individuals in their decision will of course consult their own advantage; but, for the public, emigration can scarcely go too far, because, as we have already remarked, out of the vast population of the empire, 50,000 and upwards could annually be spared, with a sensible improvement in the condition of those that remain.

In estimating the prospects of this class of emigrants, we shall, as before, consider first the situation of the settler after he has effected the clearing of his land and has only the common labours of a farm to undergo. As this is the point at which he aims, the primary question must be, whether when attained it will form a desirable condition, and we will then endeavour to lay before him the somewhat arduous steps by which alone he can reach it.

In this estimate we must begin with an inquiry relative to the extent of land which it might be prudent to undertake; and on this head we should concur with Mr Shirreff in naming fifty acres. If the settler clears and then cultivates thirty-five of these, he will do as much as can be generally expected from the personal exertions of one individual; for to dissipate his scanty funds or incur a load of debt in the purchase of lots which he can never improve, is a process which would infallibly involve him in embarrassment and ruin. The only exception seems to be where there is a family of sons, whose co-operation may enable the father to clear larger portions, which may afterwards be divided among them. Mr Talbot indeed asserts, that owing to imperfect cultivation, 100 acres form the smallest quantity on which a Canadian family can subsist. But with every deference to this gentleman's local knowledge, we find in his own statements a complete refutation of his assertion; for of a party who went out with him, some had cleared only ten acres, and none more than thirty, and yet all were satisfied; whence it is clear, that even

those whose portion was smallest must have derived from it a tolerable subsistence.

Another important question is the situation best fitted for these less opulent emigrants. We have argued that the depth of the forest or *bush* is very unsuitable for those who are to cultivate on a large scale and by hired labour; but to those who are to clear the ground with their own hands, and subsist chiefly on its produce, the same objections do not apply. The high rate of wages affects them not; they may even with advantage occasionally avail themselves of it; while the low money-value of their surplus produce, and the enhanced charge for luxuries, are to them secondary considerations. In return, they obtain equally good land at a much lower rate. They may even possess some collateral advantages; for coming, as often happens, in considerable parties from the same neighbourhood, they may cluster together, enjoy each other's society, and hence in some degree carry their country along with them. In such a district too they may afterwards obtain space for their children to settle in their immediate vicinity.

We shall now suppose the colonist established upon this footing, having thirty-five of his acres cleared, with fifteen left in wood for fuel, fences, and other purposes. Ten acres of wheat, yielding only fifteen bushels an acre, will produce 150 bushels, which can be made into 1900 quartern loaves, being above five for every day. Five acres of pease or Indian corn will feed ten hogs yielding 1600 pounds of pork, or rather more than four pounds a-day. Seven acres in pasture, with two or three in oats, turnips, or potatoes, will support the cattle meant for the yoke or stall, milch cows, and sheep sufficient to supply dairy produce, wool, and some variety of animal food. A spot may also be set aside for flax. He will then have ten or eleven acres to raise produce for sale or exchange, and the price, even at low bush-rates, will enable him to procure a certain proportion of foreign luxuries and commodities, and even to put a few pounds into his pocket. Besides, it is probable that in the course

of a limited number of years the improved communications will greatly raise the value of this part of his crops. His land, bought it may be with less than £20, may with its stock be now estimated at nearly £200.

It is evident that a degree of success considerably short of this must place the emigrant in a state of independence and abundance very superior to that of the labouring classes in Great Britain. Accordingly, among all those who have made even an approach towards it, there appears a general sentiment of satisfaction with their condition.

Mr Talbot was accompanied by eighteen settlers with their families; they had brought with them severally from £20 to £300; and in five years they had cleared from ten to thirty acres each, having among them 58 cows, 76 young cattle, and 115 sheep. Not one, it is true, had any thing in the form of cash, yet all were perfectly contented, and of each it could be said—

> "He eats his own ham, his own chickens and lamb,
> He shears his own fleece, and he wears it."

Captain Hall made a very strict investigation into the condition of the individuals conveyed from Ireland in 1825; and though they were reluctant to own the extreme poverty endured in their native country, all acknowledged their present comfortable circumstances, and the obligations they owed to those who had effected their removal. "The settlers in the woods," says Mr Pickering, "appear to be the most independent and contented people in their way I ever met with." Thomas Adsett, one of the Sussex emigrants, says, "All farmers that I see is independent and has plenty, and I wish that the poor people in England had the leavings of their tables that goes to the dogs and hogs." The author of the "Backwoods" saw several persons who had taken lands from the Canada Company who were satisfied with their prospects. She describes in a pleasing manner the aspect of the country through which she passed on the St Lawrence above Montreal; being delighted with "the

neatness, cleanliness, and comfort of the cottages and farms. You see none of the signs of poverty or its attendant miseries. No ragged, dirty, squalid children dabbling in mud or dust, but many a tidy, smart-looking lass, was spinning at the cottage doors with bright eyes and braided locks, while the younger girls were seated on the green turf or on the threshold, knitting and singing as blithe as birds." She was told, "Every little dwelling you see has its lot of land, and consequently its flock of sheep; and as the children are early taught to spin, and knit, and help to dye the yarn, their parents can afford to see them well and comfortably clothed. Many of these farms you now see in so thriving a condition were wild land thirty years ago, nothing but Indian hunting-grounds. The industry of men, and many of them poor men that had not a rood of land of their own in their own country, has effected this change." Even Mr Shirreff, who has made it his study to dispel the illusions that mislead the emigrant, fully admits that, though he "cannot hold out an immediate or ultimate prospect of great wealth, every person may obtain all the necessaries and most of the true comforts of life in the fullest abundance, unharassed by the cares of the present or apprehensions of the future."*

From these testimonies it seems impossible to doubt that the settler in Canada, when he has brought his land under cultivation and is clear of debt, is in an enviable situation when compared with the labourer in this country, and even with the tradesman who has only a precarious employment. It must not be concealed, however, that he has a hard probation to pass through, and one which requires much patience and perseverance. He who performs labour for wages reaps its fruit at once; but he who undertakes to render the forest productive must sustain nearly two years of severe

* Talbot, vol. ii. p. 198. Hall, vol. i. p. 285-295. Letters from Sussex Emigrants, p. 45. Backwoods of Canada, pp. 46, 47, 105. Shirreff, p. 349. Pickering, p. 104.

toil before he can derive the slightest benefit from his exertions. As during two or three more the labour must continue equally hard, while the produce is only slowly increasing, he ought, before he engages in this tedious and sometimes discouraging enterprise, carefully to ask himself whether he possesses the requisite energy and perseverance. It may be proper also to forewarn him that in almost every instance the first impressions of the country are unfavourable. The earliest letters written by the Sussex emigrants have not been published; but by the subsequent one of Simeon Titmouse it transpires that their former communications had all borne a gloomy character, though he adds, it was merely because the writers knew no better. Mr Menzies remarks that he had never known a person who had been less than six months in Canada who did not most deeply regret having come; on the other hand, he was convinced there was not one in a hundred who after living there a year or two would voluntarily quit it.

We shall now, as formerly, endeavour to estimate the capital which would be necessary to carry the labouring settler without any hardship beyond the unavoidable toil of clearing and cultivating his ground. The calculation is for a married couple, with three children; if the family is smaller, several of the items will be diminished in proportion; but we do not conceive that any colonist would attempt to establish himself in the woods without a wife or other female relative.

Fifty acres, say at 8s. an acre,	£20	0	0
A yoke of oxen, sled, and chain (Mr Talbot),	13	0	0
A plough (Mr Pickering),	2	0	0
Harrow-teeth, hoes, and axes (Mr Talbot compared with Mr Robinson and Mr Pickering),	2	0	0
Mr Inches gives an enumeration, which may be useful, of other implements, viz.:—Spades, shovels, dung-forks, hay-forks, implements for cleaning grain when thrashed, bags, horse-cloth, ropes for carts and for fastening horses, &c. auger, hand-saw, adze, pick-axe, hammer, shingle-axe, nails, gimlets, iron wedges, bill-hooks			
Carry forward,	£37	0	0

Brought forward,	£37	0	0
for underbrushing, grindstone, file, scythes, sickles, sneds, wheelbarrow, roller, and other little articles, which he estimates at about £10; but as he is rather prone to exaggerate, and our scale is so much smaller than Mr Pickering's farm of 200 acres, with seventy cleared, allow	4	0	0
He demands also, and seemingly not without reason, a cart, which he values at £12; under the same view allow a small and light one,	5	0	0
A log-house suited to this class of settlers (Mr Talbot),	7	10	0
A few articles of furniture; Mr Talbot allows £2, but we could not accuse him of extravagance if he made it	3	0	0
Provisions for a year and a half, or 550 days. We shall, with Mr Robinson, allow a pound of flour and one of pork daily for each of the two adults, and half that amount for the three children. This will require about ten barrels, which, however, could doubtless be now procured at somewhat lower rates than he estimates, viz. £1 for flour and £3 for pork,	40	0	0
Add some potatoes, meal, sugar, &c.	3	0	0
Some fresh clothing must be necessary before they can either make or purchase any with their produce (nowhere noticed),	5	0	0
Medical attendance, Mr Robinson, £1; Mr Buchanan, 10s.; we would rather allow for the chance of its reaching	2	0	0
Seed,	1	0	0
Total,	£107	10	0

To this must be added the expense of conveyance not only to Canada, but to that part of the country in which he is to establish himself,—a sum which, though it must vary according to circumstances, will probably raise the whole amount to £130. It is true that several of the articles, as a cow, plough, cart, will not perhaps be at first wanted, or even conveniently kept; yet, considering how small for some time must be the produce of the farm, and how heavy the claims upon it, we cannot, with some writers, encourage the expectation, that it will soon afford the means of purchasing these necessary implements. A hundred and thirty pounds, then, appears the smallest sum with which an emigrant can get on comfortably, and without any other hardship than that of cultivating the ground with the sweat of his brow.

As this sum, however, is not within the reach of many to whom emigration is desirable, it becomes at this stage an important question, whether there are any resources by which the deficiency can be supplied. As in the case of the more opulent emigrants, the labouring order of settlers can also obtain land on credit upon paying a small proportion of the price. Nearly all the same observations made in the other case will apply to theirs: though the latter, even as compared to the extent of their possessions, must be content with a smaller amount of disposable produce, and submit to greater difficulty in converting it into cash. Yet, as they have little or no expenditure, it does not seem probable that, after the struggle of the first years is over, they will find much difficulty in paying annually a few pounds. This will be easier if the creditor accepts it in produce, which in most cases he can transport to a market more conveniently than the proprietor. The terms of the Canada Company have been considered objectionable; but we have found reason to believe that they are enforced in a lenient and considerate manner.

By this arrangement, however, the emigrant saves only a small part of the sum which we have calculated as necessary to establish him in his Canadian farm. He may have only £80, £60, £40, or even £20, nay, he may have landed without a sixpence; yet even in this last case, those acquainted with the country assure us, that it is still possible for him to work his way to independence, and even to wealth. Mr Boulton had known many who arrived in a state of such entire destitution as even to find it necessary to beg a meal from him, yet in several years they were in comfortable circumstances, and could command credit to some extent. In fifteen or twenty years some of them had become men of property, members of the legislature, part of the aristocracy. These no doubt are instances of particular energy and good fortune; but Mr Fergusson broadly lays down the maxim, that "no sober, steady, industrious man, with expectations and desires under

reasonable control, ever yet lived to repent his removal to Canada."*

The resource by which the emigrant is enabled to compensate the scantiness or even total want of funds, consists in the high wages of labour. This circumstance, inconvenient to the rich, but so highly advantageous to the poor, is the combined result of the abundance of fertile land and the thinness of population. Hence every man seeks to cultivate ground of his own, and looks with disdain on a servile condition, which is submitted to only by those who are beginning the world, or have been unfortunate in it. This scarcity of hands is particularly adverse to manufactures, which, as far as possible, must be imported from abroad. There are, however, some articles too bulky to bear the expense of conveyance, which must be constructed on the spot at whatever price. Circumstances and the want of competition put it out of the power of employers to be tasking; so that a degree of skill which could not sustain the active rivalry which exists at home will not preclude full employment in the forest-land of America. He who can put a great deal of work through his hands, though in a rough manner, is the best fitted for that country. The different branches of carpentry, which necessarily includes house-building, are perhaps the most extensive. The work of the smith must also be wanted; while the necessity of fitting clothes affords room for the tailor and the shoemaker. Men are required for working in saw and flour mills, also in distilleries, breweries and manufactories of iron, which the bulk of the article, and the abundance of materials, render profitable in spite of high wages.† There have usually been some great public works going forward, and this branch of employment was lately very extensive, through the improvements undertaken by the legis-

* Report of Select Committee, p. 16. Fergusson's Second Journey, p. 27.

† Fergusson, p. 369. Mackenzie's Sketches, p. 351. Counsel for Emigrants, p. 80.

lature of Upper Canada, as well as by the Land Company in the lower province. These have been suspended by the pressure of the times, but if the plans suggested by Lord [illegible]rham and Mr Buller shall be fully carried out, this kind [illegible]employment will soon be more abundant than ever. [illegible]hose newly arrived, indeed, from being unaccustomed to such labour, do not obtain as high wages as the natives; but, after a little practice, their superior steadiness will secure them an equal or even a greater remuneration.

The most extensive branch of industry, however, has hitherto been that of farm-labourers. There has always been a number of persons who had brought out or acquired capital with which they could employ one or more, and who, from the circumstances above stated, were obliged to pay high wages. These indeed are not equal to those gained in the skilled trades; but the emigrant has meanwhile the great advantage of being initiated into colonial agriculture, which must be conducted in a manner of which there is no precedent on an English farm. So important is this benefit, that we think it an excellent advice even to the settler who carries out pretty large funds, to hire himself two or three years, during which he will become acquainted with the country, and better qualified to arrange his future plans. The situation of a labourer is, no doubt, exposed to an evil every where felt throughout Canada, except in the immediate vicinity of large towns; we mean the difficulty of getting payment in money. "Money or cash," says Titmouse, "is hard to catch," and wages paid wholly in this shape are said to be much prized. In the most favourable circumstances, the rule of payment seems to be half money and half goods,—a fact which is considered by Mr Shirreff as barring completely the prospect of rising to the rank of proprietor. Mr Talbot, on the other hand, reasonably observes, that the operative can let his wages run up, and then take them in provisions and stock, which will be as useful as money.*

* Letters from the Sussex Emigrants, pp. 12, 20. Shirreff, p. 384-386. Talbot, vol. ii. p. 216.

To raise, however, by personal labour the sum necessary to a successful occupation of land must require a very considerable time. The active and intrepid settler is usually unwilling to wait so long; and as soon as he can pay an instalment and have a little to begin with, he fixes on a spot of ground, though he still works for hire during the seasons when there is an extra demand for labour. He is thus enabled, besides supporting himself, to pay part of his advances; and it is a course which must be followed, not only by the most indigent, but more or less by all whose capital falls short of the amount indicated in our previous statement. Mr Somerville observed many who, having attempted to begin with £50 or upwards, soon became embarrassed, and were obliged to relinquish the undertaking. This double work, for himself and others, must be very severe, and will try the settler's patience by the slow progress which it allows him to make towards his favourite object. In a few years, however, he is seen to lift his head; his farm begins to yield him a subsistence; and if he still labours for hire, it is either to pay the price of his purchase or to complete his stocking. Such is the desire in that country to acquire landed property, that even those who work as tradesmen usually make this their ultimate object; and as in all the districts, though wages be high, employment is not constant, they usually purchase a lot of ground, and spend their leisure in clearing it. If they enjoy a run of work, they can afford to pay others for performing this task.

Great variety appears to mark the lot of the Canadian settlers; for while some force their way to independence and even to opulence, others remain steeped in poverty and involved in debt. Mr Somerville mentions several who possessed one or two hundred acres, without being able to draw from them a bare maintenance. Writers here generally agree in throwing the blame upon the settler himself, who, no doubt, lies under peculiar temptations to slacken in the severe exertions at first required. Habits of intemperance, which are too preva-

lent, are apt to beset him, and in numerous instances prove his ruin; perhaps even the gloom and difficulties of his early situation may be apt to drive him to this fatal expedient. Emigrants, therefore, before entering on their toils, ought diligently to prepare their minds for passing through a long series of hardship; and when once engaged should cheer themselves by the prospect of that comparative ease, abundance, and comfort, by which it will be finally crowned.*

Various estimates have been formed of the progress which a settler can make in bringing with his own hands his land into a productive state. According to one letter, a first-rate axeman will hew down an acre in five days; but the European colonist, even after some experience, requires eighteen. This is independent of logging and burning; and, considering the many other objects that claim his attention, Mr Shirreff regards six acres as the utmost that he can reasonably be expected to accomplish in a year. Even this seems a feat which few can perform. Lieutenant-colonel Cockburn considers three acres as much as can be done the first year; and Colonel Talbot, when, along with Sir Peregrine Maitland, he surveyed Mr Robinson's settlers, thought it satisfactory that they had reached this number. The emigration of 1823 amounted, at the end of three years, to 477, which at the usual rate of five to a family, would give ninety-five labouring settlers. These had in three years cleared 778 acres, or about eight each, and were considered as having done well. Mr Talbot's people, as already mentioned, had in five years cleared variously from ten to thirty acres; the lowest not having exceeded two acres a-year. One bar to their progress is the contented indifference which is apt to creep upon them when, having secured an abundance of necessaries, and feeling little desire for elegance or luxury, they seek their principal enjoyment in indolence. Mr Talbot mentions that it is not uncommon for a

* Edinburgh Quarterly Journal of Agriculture, vol. iv. p. 215. Counsel for Emigrants, p. 49-62. Shirreff, pp. 388, 389.

young Canadian, when he has chosen a suitable helpmate, to go into the bush and obtain a lot of land on credit. He labours unremittingly, early and late, till in six or seven years his debt is paid off, and he is established in some degree of comfort. Then his exertions relax; he falls into habits of idleness and dissipation, neglects his property, and becoming involved, is obliged to go deeper into the forest, and commence anew his laborious career.* It may here be observed, that a family of sons newly grown to manhood, and assisting their father, will make a little fortune to him; and the united efforts of the family may in a short time clear a large space of ground. At this stage, indeed, each may be expected to form an establishment for himself; and it may be remarked, that the provision for children is anticipated with greater confidence in this than in any higher class. Bred in active habits, a young man, with a little aid from his parents, is generally able to make his own way; or if he fall back into the class of well-paid labourers, it does not involve any very material loss of caste.

Another important modification is that of pauper emigrants sent out by the public, at once with the view of improving their own condition, and of relieving the country from the burden of supporting them. This measure, which, during periods of distress, has been repeatedly adopted on a large scale in each of the three kingdoms, is likely to be still more extensively resorted to in the case of Ireland, in consequence of the disclosures recently made respecting the extreme poverty of its lower orders. The tenants, too, on its very minutely subdivided farms seem peculiarly fitted for Canada, as they must possess a little knowledge of husbandry, and even some habits of foresight beyond the mere day-labourer. Accordingly, notwithstanding the severe reflections of Mr M'Taggart, Irish emigration, so far as hitherto reported, has been decidedly successful; and the removal of so many dependent families at once effects a most happy change in

* Report of the Select Committee, pp. 9, 148, 292. Shirreff, p. 385. Talbot, vol. ii. p. 99-103.

their own condition, and affords the only means of introducing at home a better system of managing land, as well as more comfortable habits of living among the lower classes.

Government have at different times aided in the carrying out and settlement of emigrants, and have even contemplated doing so on a greater scale; but, following the principles laid down by Lord Goderich in 1831, no actual assistance has been given, nor free grants made, except in very special circumstances. Such grants, it appears, had been often abused, or retained with merely speculative views, till the improvements around them should enhance their value as objects of sale. It was therefore considered most eligible that the poorer emigrants should begin by working at the high wages which the country affords, and thereby raise funds to purchase land and locate themselves upon it. All that Ministers undertook was to appoint agents at the several chief towns to receive and direct them, and, if greater numbers should arrive at any time than could find occupation, to supply employment on some public work. During the great migration of 1832, no doubt, when 35,000 proceeded to Upper Canada, Sir John Colborne, finding it impossible to dispose of them all, was obliged to spend not less than £13,286 on their maintenance,—an act of benevolence which was sanctioned by government, though it very far exceeded the authorized sum. The amount was reduced in the following year to £5000: in 1832, the number to whom aid was afforded by landlords and parishes was 4988.

Under the circumstances in which this kind of emigration takes place, a strict economy is very specially called for. When Mr Robinson undertook to establish his colony in 1823, he found that the expense of settling 568 amounted to £12,539, or £22, 1s. 6d. for each. But that gentleman, after conducting thither the larger number of 2024 in 1825, calculated that a family of four could be conveyed across the Atlantic, supported fifteen months on wheaten bread and pork, supplied with all the

necessary implements, and even with a cow, for about £60. Mr Buchanan reckons that this sum might be reduced to £40. He conceives that, to a poor Irish family, oatmeal, potatoes, and herrings, may in a great measure supersede pork and wheat-flour; and that a cow cannot be fed on the land till after some time, when the settler, if he exerts himself, should be able to purchase one; but this we suspect is exacting rather too much. An emigration of 167 families from Lanarkshire was effected at a cost of £11, 3s. 7d. for each individual. They did not, however, receive food or implements. In the case of paupers and of labourers conveyed at the expense of parishes, it is generally considered enough if they be enabled to reach a spot where they can obtain the good wages of the country. With this view, it is only necessary to pay their passage, and let them have two or three pounds in their pocket on landing. This sum should be intrusted to the agent for emigration in this country, who will give an order on his correspondent in Canada; for if given here to the individuals themselves, there is great danger that it will be squandered on the passage. In this way they may be conveyed for £6 a-head.*

There has been a peculiar class of emigrants consisting of soldiers and sailors enjoying pensions for past services, which they had been induced to exchange for grants of land, with a sum of money to locate themselves upon it. This experiment, never perhaps very promising, has been attended with but limited success; for such persons are usually somewhat advanced in life, with questionable habits, and little likely to possess that patient industry which can alone ensure success in such a career. Of 1700 who went out in 1832, Mr Buchanan reports that many loitered, spent their money, and became dependent upon charity; a number, predisposed by intemperance, died of cholera; and about 100 returned to the United Kingdom. By Mr Spring Rice's

* Report of Select Committee, p. 217. Picken, Appendix, pp. vi. vii. Returns 1836, p. 15-17.

letter of 12th July 1834, the system of granting lands to discharged soldiers is ordered to be discontinued.*

We are now called upon to consider the plan of emigration and settlement proposed by Mr Buller in his able Report formed under Lord Durham's direction. We must trust to the candour of those eminent individuals if, in doing justice to the diligence and talent with which the design is framed, we should as to some particulars feel obliged to express our dissent.

The greatest evil, in the eyes of Mr Buller, arises from the fact, that vast tracts of land have been granted on various pretexts to individuals who, refusing either to improve or to sell, continue to retain them, in contemplation of the augmented value which they may hereafter derive from the progress of settlement. Without entering into details, it may be stated that these lots considerably exceed the amount of those actually settled and cultivated. Such grants not only remain as dead stock, but intercept the intercourse between the settled tracts, and render the roads and other communications, on which the welfare of the country essentially depends, much more expensive. It is proposed, therefore, to impose a tax of 2d. per acre on all lands thus retained in a wild state, and, in case the payment in money should be inconvenient, to accept portions of the ground itself, in lots of not less than 100 acres, at the rate of 4s. per acre. The produce of this impost, joined to that of the sales of land and timber, is proposed to be employed, first, in carrying out, under the auspices of Government, an extensive system of emigration, then in forming railroads, canals, and other communications, without which the finest soil, from the want of any means of conveying its produce to market, is of very inferior value. As the mere annual amount of these funds, however, would only enable the improvements to make a limited and tardy progress, he proposes to raise at once a large loan on their credit. Thus the works

* Returns, Emigration 1833, p. 6. Emigration Papers 1834, p. 8.

might be commenced at once on a great scale, and their good effects speedily come into operation; while to prevent the abuses incident to such operations when carried on by Government, it is suggested that a central commission should be formed in England to act in concert with commissioners in the colonies, who shall be bound to publish frequent reports.

In regard to the disposal of government-lands, Mr Buller concurs with the late commissioners in thinking that they ought to be sold only for ready money. He advises, however, that no restriction should be enforced as to the quantity purchased at one time, whether by an individual or a body. Such regulations are so easily evaded as to be nugatory; and besides, the acquirement of large blocks by companies and capitalists, who open roads, erect mills and bridges, and prepare the land for occupation, has been the principal means whereby settlement has been extended in the United States. But he does not recommend the system of auction, because it has been found to create great delay and inconvenience to the settler, who, after an expensive survey, is often disappointed of the spot he has fixed on. Nor does it appear on most occasions, either in Canada or the States, to produce much above the upset price. He therefore prefers a fixed rate, at which any one may procure the lands which remain unsold; and this, after much consideration, he proposes to fix at 10s. an acre.

Such is the outline of Mr Buller's plan, which, on the whole, appears to us extremely judicious, and which we should be happy to see carried speedily into effect, though much, no doubt, will depend on the management of the details, which in the hands of a high official department are too often misconducted. The selection of the public works is a most momentous point, especially after so many failures in those from time to time undertaken by the British Government. We are sorry to add that several of those proposed by Mr Buller himself appear to us not exempt from this censure; but intending in the following chapter to take a full view of

this very important subject, we shall reserve our observations.

The only point on which we shall now take leave to dissent is the price of 10s. proposed to be asked for the crown property. The public lands of the Union, put up at $1\frac{1}{4}$ dollar (5s. 3d. sterling), have of late produced little or nothing higher; and yet it is well known that though more distant from market they possess a superiority in point of climate as well as of soil, and are the object of more extensive competition. Besides, it seems to be admitted that the wild lands in Canada have no chance of bringing this price at present; but it is held out that they will readily do so when the projected communications shall be completed and the adjoining properties settled. We may observe, however, that in the western states of Indiana, Illinois, and Michigan, vast improvements of this nature have been carried on for years, and many millions expended, without producing such an effect. In locking up these lands, too, from settlement by a prohibitory price, with the speculative view of a rise in their value, would not Government be following the very example so much reprobated in individuals, and add to the evil of keeping unimproved blocks interposed between the cultivated districts? The expected rise moreover appears to be very doubtful. From some cause which we cannot fully explain, the price of such lands in the United States, instead of advancing with the progress of settlement and the eager competition for their acquirement, has been constantly falling. Before 1820 the minimum was two dollars, allowing indeed some credit; and in that year the system was adopted of selling by auction for ready money at the upset price of 5s. 6d. sterling. For some time higher terms were realized, but these gradually fell, till in the great speculating year of 1836, when upwards of twenty millions of acres were sold, the average did not exceed the upset price of $1\frac{1}{4}$ dollar.*

* Official Account in the American Almanac for 1839, p. 101.

We apprehend that Mr Buller has been led into a great error as to the extent of crown lands, especially in Upper Canada. He observes that its surveyed territory amounts to 17,653,544 acres, of which 16,506,525 have been granted, leaving 1,147,019, which he and Lord Durham appear to consider as the whole amount that Government has now to dispose of.* But in fact the tracts surveyed and formed into townships constitute only a small proportion of its immense extent. The part thus laid out in the central districts cannot exceed a third of the large space reaching northward from Lake Ontario to the Ottawa and Lake Nipissing, the remainder of which is perhaps not much short of all the lands already granted. Of this tract some detached portions bordering on Lake Huron were pointed out to the reporter, but do not seem to have attracted his attention.† Moreover, beyond these last-mentioned boundaries towards the north and west is a region still more extensive. Mr Bouchette, whose accuracy stands so high, estimates the area of Upper Canada at 141,000 square miles or 90,240,000 acres, leaving upwards of 70,000,000 acres still open for location. In the part, too, assigned to Lower Canada, vast tracts extend northward from the Ottawa to the height of the land belonging to Hudson's Bay. The unsurveyed territory may thus be said to be in a practical sense inexhaustible; and being in a lower latitude than 48°, it is all in a climate admitting of culture, and is so perforated by great rivers and lakes that communications can without any serious difficulty be formed throughout. We by no means recommend that such operations should be immediately undertaken, but rather that, according to Mr Buller's plan, the districts now imperfectly occupied should be previously filled up. But these facts, which ought doubtless to be taken into consideration, seem to leave no ground for a churlish or stinted distribution.

There remains still an important branch of informa-

* Report, p. 77; Appendix B, p. 8.
† Appendix B, p. 111-316.

tion, which respects the means of conveyance to the settlement, and the expenditure which must be incurred in this removal. These particulars might seem to have belonged more naturally to an earlier part of our investigation; yet we conceive they will be better understood after having explained the different classes of emigrants, their localities, and the accommodations which in our view appear indispensable. The task is arduous, and must absorb a certain portion of the funds destined for the great undertaking; though from the large scale on which it is now taking place, and from its having become a national object, the expenditure has been reduced to the lowest possible limit. At all the great ports,—London, Liverpool, Bristol, Leith, Greenock, Dublin, Cork, Limerick, and Belfast, Government have named agents, who do not indeed supply any funds, but afford to the intending emigrant every information of which he can stand in need.

We begin by assuming that in almost every instance it will be deemed important to expend as little as possible upon the removal; and provided comfort or even health be secured, state and luxury may well be dispensed with. The steerage passengers obtain a place on very easy terms in the vessels destined for the timber-trade, many of which go out in ballast; the rates being generally from £2, 10s. to £3 for adults. According to the statement made by our Leith correspondent, two children between the ages of seven and fourteen are charged as one adult; between one and seven, three are counted as one; under a year old they go free. This charge, however, does not include provisions, the captain furnishing only berths, water, and fire. The store laid in will of course be according to the habits or means of the passenger; but it must be calculated for the longest period which the voyage is likely to last, leaving in ordinary cases a surplus, which may be consumed after landing. The law requires seventy pounds of biscuit or other food from grain; but this is generally considered too small. Mr Buchanan recommends for a family of

five, forty-eight stone of potatoes, two and a half hundredweight of oatmeal or flour, twenty pounds of butter in a keg, one gallon of molasses, twenty pounds of bacon, fifty pounds of herrings in a keg, one gallon of spirits, and some vinegar. These, he thinks, may be provided in Scotland for £5, in England for £7; but our correspondent reckons the outlay at not less than 30s. a-head. When provisions are furnished the passage-money is nearly doubled; and there is also levied at Quebec an hospital-tax of 4s. 6d. sterling, which is usually paid to the captain. In this case, as before, two children under fourteen, and three under seven, are only charged as one adult.

The cabin-passage from Liverpool to Quebec varies from £15 to £20; but at Leith, Greenock, and Aberdeen, it is only £10 or £12. Our Limerick correspondent states that from thence it does not exceed £8, 8s. These rates include provisions; but in many instances it is in the choice of families to take a separate cabin, in which case they can supply themselves. Mr Magrath, whose establishment consisted of nine, hired the cabin for £50 and provisioned them for £20.

A great proportion of the emigrants to Upper Canada now prefer to go by the way of New York; but, though the passage is considerably shorter, higher rates are charged, owing to the want of accommodation from the timber-trade. The steerage passengers pay from £3, 10s. to £4 without provisions. Those in the cabin at Liverpool pay from £20 to £25, but in other ports considerably less, even so low as £12, 12s. In the magnificent packets which sail from the Mersey the fare is thirty-five guineas, but in return for this sum every species of splendour and luxury is enjoyed. Mr Fergusson engaged a state-cabin in one of them, and was thereby enabled to convey a family of ten with a man-servant to New York for £212.*

* The information here given is chiefly from communications by well-informed individuals to whom application was made by us at the principal ports whence vessels sail for America.

Emigrants should if possible learn the character of the captain with whom they are to sail, otherwise they may suffer severely. Some shipmasters have furnished provisions, and particularly water, both deficient in amount and of bad quality, by which the health of the passengers has greatly suffered; while others have demanded the hospital-tax for every child at the same rate as for an adult, and after engaging to go to Montreal have stopped at Quebec. On information being given to the emigration-agent, every exertion will be made by him to obtain redress: and we are bound to add, on the assurance of Mr Buchanan, that the complaints of this kind in 1836 were uncommonly few.*

It is also important for the emigrant to consider what supplies he should take with him; for while all manufactured goods are in the colony both dearer and more clumsily made than at home, articles of great bulk and delicate fabric are carried out at a heavy expense, and in the frequent changes of conveyance, damage can scarcely be avoided. Furniture is very cumbrous, and from the abundance of wood it can be had in Canada at once cheaper and much better adapted to a forest residence. Nearly the same may be said respecting bulky articles composed of iron. Glass and porcelain can hardly escape accident; but on the other hand, of every kind of wearing-apparel and bedding, a stock fitted to endure some time may be carried out with great advantage. This last indeed is indispensable, not being usually furnished on shipboard. Boots and shoes are particularly recommended, being in the colony ill made, of leather imperfectly tanned, and not at all durable. If a cultivated understanding leads the settler to wish for books, a better choice and at cheaper rates will be found at home. The same may be said of every object connected with art or science. The artisan should take his tools. Those fond of gardening ought to carry the seeds of plants and vegetables, which can scarcely be had there

* Returns 1836, pp. 12, 13, 22.

of good quality; yet it ought to be considered whether a settler is likely to find much leisure for these recreations. On the whole, he ought to be on his guard against drawing too much on his funds before going to a place where money is at once so scarce and so valuable.*

Having landed our emigrant in America, we must conduct him to those parts of the interior where he will procure land or find employment. Generally speaking it is necessary to go to a considerable distance, and this journey in most cases is more troublesome and perhaps fuller of incident than his sea-voyage. Upper Canada has hitherto been the principal resort, and the Newcastle and Home districts the nearest points. Many vessels now proceed at once to Montreal; but supposing the emigrant to have landed at Quebec, there is a daily passage to the former city in comfortable steam-ships,—the cabin-fare £1, 6s., the steerage 4s. 4d. and sometimes so low as 2s. 2d.

From Montreal to Kingston there are two modes of proceeding,—one along the St Lawrence, the other by the Ottawa and the Rideau Canal. On the former the more wealthy passenger engages a seat in the coach, which, alternately with a steamer, conveys him to Prescott, where, having passed the obstructions on the river, he performs the rest of the journey by steam. The whole is managed by individuals called forwarders, to whom a fare of ten dollars is paid; and the time occupied is two days. The expense of living is 1s. 8d. each meal, and the luggage is charged 2s. 4d. sterling per cwt. for all above fifty pounds, which are allowed to each passenger. The traveller of a less opulent class takes a passage in one of the canal-boats, which are from fifteen to twenty-five tons, and mostly open; the fare to Prescott, 140 miles, being 4s. 4d. Thence he can go in the steam-vessel to Kingston, paying for a place in

* Backwoods, pp. 179, 180. Murray's Emigrant's and Traveller's Guide, p. 10. Statistical Sketches, p. 13-15. Magrath, pp. 26, 27.

the steerage 2s. 2d. These rates are of course exclusive of provisions, which he must carry with him. The transit occupies six or seven days.

On the Rideau line the first class of travellers are conveyed by coach to La Chine, the rest mostly by steam. This route requires four or five days, but leads through a variety of agreeable scenery,—the fare is £2, 12s. including provisions. The second class proceed through the canals in decked boats, and pay 9s. without any allowance of food. As they are sheltered from the weather, this mode of travelling is considered for them the most commodious.

From Kingston the emigrant finds a cheap conveyance by steam to the whole circuit of Lake Ontario. If his destination be the Newcastle District, a vessel conveys him to Cobourg, 100 miles, for 13s. in the cabin, or 4s. 4d. in the steerage; and if he goes to the Home or more western districts, he is carried to Toronto for an additional 13s. or 2s. 2d. From Toronto steamers proceed daily to Niagara or Hamilton, and the charge is 8s. 8d. or 4s. 4d. steerage. From Niagara he may be transported by coach or wagon to Chippeway, whence steamers ply to every part of the shores of Lake Erie. From the former place to Detroit, 350 miles, the first style of travelling costs £2, 12s., the second only a fourth of that amount.

The stranger who contemplates the purchase of land will probably find it necessary to spend some time in making arrangements at Toronto or some other town near the intended spot; and during this period his expense will vary according to circumstances. Mr Magrath reckoned that a family of nine might reside a fortnight in lodgings at Toronto for £13. There is then the charge of conveyance to the locality selected by him, which will be more or less according to distance, quantity of luggage, and the state of the roads. From Hamilton to London, fifty-six miles, the regular fare by wagon is stated at 19s. 6d.—thence to Goderich 15s. 2d. Two or three parties may lighten the expense by hiring a vehicle

in common. Mr Magrath states that the transport of his family to the London District cost £8.*

The route is now to be traced from New York to Upper Canada: and from that city the traveller is conveyed up the Hudson to Albany at rates which vary, but are always moderate. Mr Fergusson paid 9s. cabin-fare, with 2s. 3d. for a handsome dinner. The steerage is 4s. 4d., sometimes only 2s. 2d. At Albany commences the great Erie Canal, a branch of which leads to Oswego on the southern shore of Lake Ontario; and the distance, 200 miles, may be performed for 13s. 4d. without provisions. The cabin-passenger, whose way is somewhat shortened by the Schenectady railroad, pays £1, 14s., for which he has a good table. From Oswego, steamers constantly ply to all the towns on the lake at the same moderate fares as from Kingston. He, however, who is destined for the most western districts may proceed the whole way along the canal to Buffalo, 363 miles, for £3, 0s. 2d. cabin, £1, 3s. 10d. steerage. Mr Fergusson conveyed his family, which consisted of ten, with every comfort for £50, 12s.

We have finally to conduct the settler to the Eastern Townships, the route to which by Quebec is so short and easy as to constitute one of their chief recommendations. The Montreal steamer readily conveys him from Quebec to Port St Francis, a distance of ninety-one miles; and here the American Land Company have prepared a good inn and little cottages, which may be temporarily occupied as lodgings. From Port St Francis a coach sets out daily and arrives late in the evening at Sherbrooke, in the heart of the Townships; the fare being £1, 6s. Two persons may hire a *calèche*, or light spring-wagon, with one horse, which will make the journey in two days, the hire eight dollars, with about 1s. for each meal, and 9d. for bed. Four may have a French cart for six dollars, exclusive of expenses, and, for the same sum, nine cwt. of baggage will be conveyed.

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* Murray's Guide, pp. 17, 18, 21-25, 34, 41-43.

From New York, Montreal or the Townships may be reached by the canal from Albany to Lake Champlain. At its northern extremity is the port of St John, whence a railway now leads to La Prairie, separated from Montreal only by the channel of the St Lawrence. Those destined for the Townships stop at Burlington about half-way along the lake, whence a land-route of ninety miles leads to Stanstead, and another of thirty-three to Sherbrooke. A stage runs this way twice a-week. It forms, however, so circuitous a journey, when compared with that from Quebec, that it cannot be recommended except under peculiar circumstances.*

The land companies form an important feature in the domestic economy of Canada, particularly as regards emigration. Each of them has purchased from government a large block, for which they pay by successive instalments, and then retail it in small lots, suited to the means of the different classes of emigrants. To secure profit to themselves, they exact of course a large increase of price; but besides granting a pretty long credit, they afford aid and sometimes even advances to the emigrant. They also make roads and other communications through the territory; which operations have been carried on by the Canada Company in the upper province, and by the North American Land Company in the lower.

The former were established by royal charter on the 19th August 1826, under the Act 6th Geo. IV. cap. 75, by which they are entitled to all the privileges of a corporate body, and to hold lands in any part of his majesty's dominions. They immediately contracted for the purchase of 1,384,413 acres of crown and 829,430 of clergy reserves; but as government found that they could not alienate the latter portion, they allowed them as a substitute to select 1,100,000 acres on the eastern shore of Lake Huron, making in all 2,484,413 acres.

* Letters from Eastern Townships, published by American Land Company, pp. 6, 7. Murray's Guide, p. 50-55.

The crown reserves consist of detached blocks of various sizes, scattered throughout every part of the province, the most important being that composing the township of Guelph, in Gore District. For the whole they stipulated to pay £348,000, by annual instalments varying from £15,000 to £20,000; but of this sum they were allowed £45,000, to be employed in roads and other improvements.

In pursuance of this arrangement, the Company at the end of 1836 had paid up to government £185,000, and had expended £26,000 in improvements. They had sold in all 670,000 acres. The amount of sales during the year just named was 50,030 acres in the Huron tract, at the average price of 10s. 8d.; and 40,077 in other quarters at 12s. 4d. This, with some town lots, raised their income for the year to £52,000.* They have since paid the instalments for 1837 and 1838, notwithstanding the severe check caused by the insurrection; but their sales in the latter year did not exceed 13,299 acres, of which 7618 were in the Crown reserves, 254 in the Guelph territory, and 5427 in the Huron tract. In the two former the prices varied from 15s. 9d. to 10s. 11d., in the last from 13s. 7d. to 10s. 3d. They consider that there is now nothing in the state of the country to discourage emigration, which they expect to take place on a great scale next year. The extensive transfer made to the Company has been objected to chiefly on political grounds; yet Mr Buller allows that settlement has proceeded on their lands more rapidly and regularly than on those of the crown.†

The American Land Company were of later origin, and their operations have taken place in a different quarter. They contemplate extending their transactions to various parts of British America, but as yet have confined them to the Eastern Townships of Lower Canada.

* Bouchette, vol. i. pp. 113, 114. Summary of last annual report in the Morning Chronicle of March 30, 1837. The statement given in this and other public prints was, we believe, not sanctioned by the directors; but its correctness has not been questioned.

† Appendix B, p. 10.

By an agreement concluded with them on the part of the Government by Lord Stanley, in December 1833, they received 251,336 acres of crown-reserves and surveyed lands in the counties of Sherbrooke, Shefford, and Stanstead; and 596,325 of unsurveyed lands in the counties of Sherbrooke. The site and boundaries have already been described under the topography of Lower Canada. The price was to be £120,000, payable by instalments in ten years; but one-half was to be allowed for roads, bridges, and other improvements, if sanctioned by the governor-in-chief.*

By subsequent arrangements the Company have acquired additional lands, making their whole possessions, at the beginning of 1837, amount to 1,209,250 acres, purchased for the price of £177,372, to which they had added 8946 acres of improved farms, with 932 town lots, which cost them £15,474. A road has been made by them from Montreal to Sherbrooke, another from Port St Francis to Richmond, and leading also to Sherbrooke, which has become, as it were, their capital. Thence another has been completed to Victoria, a small town founded in the heart of their great block, through which roads are immediately to be undertaken from this point, laying open its different tracts for settlement. The Company give to the poorer immigrants employment on these works, build a log-house for them, clear a small spot of ground, and even, if circumstances require, make an advance of subsistence. It is generally stated that they treat settlers with kindness and attention. The lands were scarcely opened for colonization till 1836, during which year there were sold 33,539 acres, for the price of £14,752, 16s. sterling, payable by instalments. The number of families settled in and round Victoria amounted at the end of that year to 326, comprising 1793 persons, and occupying 23,876 acres. At the same town as well as at Sherbrooke they have erected grist and saw mills, which are necessary for the accommodation

* Papers relating to Canada Lands, 21st April 1837, pp. 3, 4.

of the colonists, and have also formed a large woollen manufactory, chiefly to afford a market for the raw material produced in the surrounding district. We doubt the expediency or probable advantage of this last establishment, which seems neither suited to the infant state of the district, nor to the management of a large non-resident body.

The prospects of the Company were of late deeply clouded by the adverse state of affairs in the colony. The malecontent party used every effort to thwart their measures and to deter settlers, who were also alarmed by the disturbed condition of the province. On the 3d February 1838 they represented to Lord Glenelg that they had paid as follows :—

Instalments of the original purchase,	£19,200
Crown and clergy reserves,	25,750
Improvements and surveys,	35,000
Provisions &c. to settlers,	15,000
Incidental expenses,	17,196
Forming Port St Francis,	6,870
Purchase and improvement of Sherbrooke,	23,170
Minor private purchases,	34,450
	£176,636
Still due on original purchase,	42,000
..... reserves,	6,255
..... improvement fund,	39,600
	£263,891

In return for this vast outlay their sales had not exceeded £4500, of which only £1500 had been realized. In these circumstances, they craved a remission of interest on the amount still due, and a suspension for five years of the payment of farther instalments. Government, however, declined doing more than remit both interest and instalments for one year, leaving the question of further indulgence to be decided by circumstances; and when this relaxation was represented as quite insufficient, it was intimated that nothing more could be done without reference to Lord Durham. His lordship reported that he considered it of the worst consequence that the crown should not enforce the con-

ditions attached to its grants; that while he highly approved of such undertakings as that of the Company, he considered their bargain decidedly advantageous; and added that he had refused the same terms, as unfavourable to the state, when offered by highly respectable parties for another block of 225,000 acres. The only relief which he could recommend was the resumption by Government of the lands sold to them, which, for the reasons assigned by him, might be done he thought on advantageous terms. Nothing further has publicly transpired, though we believe negotiations of some kind are still going on.*

The existence of such a corporation is strongly objected to by a numerous party, who urge that it creates a monopoly of the lands, and carries money out of the country. The Commissioners on Grievances have however reported favourably on the subject, conceiving that the Company have done much to improve the district, and assist the settler by various means which Government could not employ. The first objection they conceive to be obviated by the quantity of land still in the hands of the crown, and exposed to periodical sale; and to preserve this check, they recommend that no privileged body shall ever receive similar grants. With regard to the taking capital out of the country, it is observed, that the Company must previously have brought it in; and that while this operation is positive and immediate, the other is remote, and probably less extensive.†

Before closing this chapter, it may be expected that we should say a few words respecting the comparative advantages of Canada and the United States; and this appears the more necessary, as Mr Shirreff has drawn so favourable a picture, and given so decided a preference to the latter. Other respectable writers seem also to

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* Papers (11th February 1839), pp. 36-39, 149-151.

† General Report, p. 23-31. Third Report of American Land Company, March 1837.

acquiesce in the conclusion, that by those who can overcome their reluctance to place themselves under a foreign government, more wealth may be obtained in the States. We confess, however, that the author of the "Tour through North America" appears to us to labour under a bias on this particular head; though we must add that his statement of facts is so candid as to afford the means of refuting his own flattering arguments.

In the first place, we may observe, that Illinois, to which his observations specially apply, is a most complete *bush* territory, more remote from markets than even those distant parts of Canada which he considers on that ground as unfit for emigration. Its produce can reach New Orleans only by about a thousand miles of river navigation, and must there make a large circuit to the Atlantic States, where the market is usually low. If, as he seems to suppose possible, the route of Upper Canada should be preferred, whence Illinois is also about a thousand miles distant, its comparative remoteness will become still more palpable. Accordingly the prices are so miserably small, as to preclude all chance of any return for capital invested in its soil. At Springfield, in the most flourishing part of the country, he found wheat selling at 37½ cents (1s. 9d.), and Indian corn at 10 cents (not quite 6d.) He dazzles the reader, indeed, by his estimate of the produce of 200 acres, of which 160 are cleared, and whence he expects that 1600 bushels of wheat and 6400 of Indian corn may be obtained. As he has not, however, ventured to convert these large amounts into money, we shall do it for him on his own data.

1600 bushels wheat, at 1s. 9d. . .	£140	0	0
6400 do. Indian corn, at 5½d. . .	146	13	4
	£286	13	4
Allow the same expense as on our Canadian farm (see p. 120), although the wages are stated to be higher, and there are ten acres more under culture, .	265	15	0
Profit,	£20	18	4

This estimate, we presume, will dispose of the ques-

tion in regard to gentlemen settlers, or those who cultivate by hired labour, and expect to enjoy some of the elegances of life; and it is worthy of notice that all foreign manufactures and luxuries are much more heavily taxed. One writer states, that a man might pay the expenses of a journey from New York to Toronto, by merely buying two suits of clothes at the latter town. The exorbitant tariff, indeed, is in process of reduction; yet a protecting duty, as it is called (heavy when compared to that levied in Canada), is still to be retained. Our author himself admits the habitations in Illinois to be extremely poor; and a British settler in Michigan treats as ridiculous the idea of a lady or gentleman living there, observing that a female servant is not to be procured on any terms.

Mr Shirreff perhaps might still maintain that, for the labouring settler, Illinois is beyond comparison preferable; but we glean from himself some particulars which make this not quite so manifest. He admits, for instance, that agricultural employment is not always to be found westward of the Alleghany; and this might well have been suspected, as the prices of produce seem insufficient to enable the proprietor to pay for any extent of hired labour. The only immigrants, therefore, who can work their way in this district are those who can exercise trades suited to it; and even these employments, being limited to the small towns and villages, cannot maintain a very numerous body.

This author dwells much on the low price of land, which he represents as uniformly offered to all purchasers at $1\frac{1}{4}$ dollar, or 5s. 3d. per acre. This plan of putting the same price on the best and the worst ground appeared to us very singular; but we soon found from his own statement, that when a tract has been surveyed for settlement, the sale is advertised, and the lots are put up and *sold to the highest bidder*. The sale is continued *from day to day*, as long as any bidding continues; and it is only the land for which no one will offer any thing that is thrown open to the public at the

low price he mentions. The system of requiring payment on the spot, so highly approved by Mr Shirreff, certainly possesses some advantages, though it may not always suit the poorer settlers. There is, besides, reason to suspect, that at these great sales almost all the good land is bought up by speculators, who retail it, on credit perhaps, but at greatly advanced prices, to the cultivator. We observe accordingly that an emigrant in Michigan was unable to procure a suitable lot for less than three dollars an acre.

The nature of the surface in Illinois, consisting to a great extent of prairie, is considered to have a vast superiority over the heavily timbered plains of Canada. The settler, it is said, escapes the severe labour of cutting down the forest, and can bring his ground much sooner into full cultivation. We suspect, however, that the land possessing this advantage is much more limited than is here supposed; and a prairie surface is generally wet, fit only for pasturage. Carey and Lea state the extent of the dry prairies at only 1,200,000 acres, or about a thirtieth part of the entire surface. Besides, the absolute want of timber for fuel, fences, and implements, is a more irremediable evil than its excess. Hence, as our author himself observes, settlements are established only along the edge of the forest, and even the distance of half a mile from it is considered as approaching an inconvenience. Moreover the prairie land, entangled with strong roots of grass, must be broken up by a heavy ploughing with six oxen. This Mr Shirreff supposes may be executed by contract for two dollars,—an estimate which appears to us very singular, when we find Mr Pickering reckon common ploughing for corn in Canada, a country of cheaper labour, at the same rate. It is also a disadvantage for the poor emigrant, that this operation must be paid for in hard cash, which perhaps he has not; while the clearing of the forest, though a heavier task, can be executed with his own hands. Nor do the Americans themselves show any such decided preference for prairie, but resort in equal proportion to

the heavily timbered district of Michigan. Between 1821 and 1831, Illinois increased from 55,000 to 157,000; Michigan from 9000 to 31,000. In 1836, a greater quantity of land was sold in the latter than in the former.*

Since writing these remarks, we have found views nearly similar to those of Mr Shirreff advocated with considerable eloquence under the high authority of Lord Durham. Being, however, unconvinced by his lordship's statements, and dreading that they may produce effects which he himself might regret, it may be necessary to examine them with some attention.

His lordship dwells strongly on the contrast presented on the opposite sides of the frontier line. "On the American side, all is activity and bustle; the forest has been widely cleared; every year numerous settlements are formed, and thousands of farms are created out of the waste; the country is intersected by common roads; canals and railways are finished, or in the course of formation, all of which are crowded by people, and enlivened by numerous carriages and large steam-boats; every village has its schoolhouse and place of public worship. But on the British side of the line, with the exception of a few favoured spots, where some approach to American prosperity is apparent, all seems waste and desolate. A widely scattered population, hardy and industrious, but poor and unenterprising, are separated from each other by tracts of intervening forest, without towns and markets, almost without roads, living in mean houses, drawing little more than a rude subsistence from ill-cultivated land, and seemingly incapable of improving their condition." He mentions as customary in the Eastern Townships, that travellers make a circuit through the territory of the States in order to obtain the benefit of their roads. Major Head, in travelling along the New Brunswick frontier, could always tell on which side

* Shirreff, pp. 250-252, 377, 399, 421, 435, 447. Counsel for Emigrants, pp. 52, 53, 54. Carey and Lea, Geography of America (8vo, London 1823), pp. 296, 318.

of the line he was, from the obvious superiority of the American settlements.

We do not mean to dispute these facts, or the activity of the republicans, coupled with the advantage of their municipal institutions. But the comparison seems unfairly instituted between infant settlements and others which have been the growth of centuries, and fed by a long-continued stream of immigration. Lower Canada, when conquered in 1762, contained about 60,000 French inhabitants, all located on the great rivers, beyond which they have never moved. The southern frontier, whose backward state is particularly alluded to, was then a complete desert, and, according to Lord Durham's own information, the Government adopted the bad policy of keeping it so, as a barrier against the States. It is only within a very few years that British settlers have been invited, or even permitted, to occupy the country. How, then, could it ever stand a comparison with the New England states, the most improved in the Union, and which have been advancing upwards of two centuries. New Brunswick, again, in 1783 was an unbroken forest, in which, till seven years ago, only a few troops of refugees and disbanded soldiers could be persuaded to settle. This small number naturally preferred the coast and water frontage, and scarcely at all penetrated into the deep inland frontier. Upper Canada, in 1783, was equally desolate, and was only slowly peopled by veteran troops and American squatters till 1824, when the great tide of immigration set in towards it. The difference along its border is admitted to be less perceptible; and it may be observed, that the picture of villages, towns, and even cities with fine churches and great hotels, springing out of the desert, is realized only upon the great Erie Canal,—the most important commercial work perhaps existing, being the only channel for the industrious products of several millions of people. Buffalo, the key of this intercourse, could not but surpass Montreal, which supplies the wants of a population comparatively trifling.

The proper comparison evidently is between the British settlements and the new states recently formed in the western territory of the Union,—Indiana, Illinois, and Michigan. We have shown, even from observers who viewed them with a favourable eye, that they as yet realize nothing of that brilliant picture so imposingly drawn by Lord Durham; but that the habitations, and all the accommodations of life, are rude and poor in the extreme. It may be important to add the testimony of Mr Hall, an American citizen, just returned from a tour in those states. Even the long-settled and improved one of Ohio, he observes, exhibits "neat villages, extensive farms, and valuable improvements, alternating with rude hamlets, solitary log-houses, and masses of unbroken forest. The exterior development, as presented to the eye of the stranger, is new, rough, and uninviting. Wealth and labour have been employed, with great energy and success, in reducing the wild land into cultivated fields, in bringing the resources of the country into operation, and in providing the comforts of life; but few expenditures have been made for ornament and luxury.

"Passing westerly through *Indiana*, *Illinois*, and *Missouri*, there will be found still less appearance of improvement. Generally speaking, the settlers in these states continue to reside in their primitive dwellings; and hence the log-house and the rough worm-fence are the chief objects of human construction that meet the eye. There is an abundance, even to profusion, of all the necessaries of life, but none of the luxuries, and few of what would be called comforts by those who are unaccustomed to the habits of the country."*

His lordship and Mr Buller have represented the immigrants to Upper Canada as so miserably disappointed, that more than half their number have removed to the United States. This is inconsistent with the statement of Mr Hawke, the chief emigrant agent, who ought to be the best judge, and who asserts that *at least* three-fourths remained, though a considerable number were

* Quoted in Athenæum, February 1839.

attracted by the public works carried on beyond the border. Lord Durham endeavours to controvert this testimony by a calculation,* which does not, however, appear to us conclusive. The population, in January 1830, was 200,000, and is supposed to have risen in 1838 to 400,000. The first number is reported to have increased by births at the rate of 3 per cent. per annum, which shall be admitted, though large for a country represented in so depressed a condition. The immigrants by the St Lawrence were 165,000; and these, too, it is said, should have increased at the same rate. Considering, however, that only about a third were females, and that the unmarried settlers, amid the difficulties of their location, were not likely for some time to risk a matrimonial union, we do think that if, in the first years, they kept up their numbers, it was the very utmost that could be expected. Fifty thousand are then claimed as probably coming by New York; and thus we shall have—

Original number,		200,000
Increased by births,		54,000
Immigrants by Quebec,	165,000	
... by New York,	50,000	
		215,000
		469,000
Re-emigrated a fourth,		54,000
Should be,		415,000

Thus are we supplied with a result differing very little from Mr Hawke's statement, even if the hypothetical number of 400,000 were taken as correct. Sir Francis Head, however, supposes 450,000; and our impression would be something intermediate between these two estimates.

Lord Durham adduces, as a striking proof of the superiority of the Union, the comparatively high price of land. So far as this relates to the old and fully peopled states, it follows as a matter of course; but when he extends it to those newly formed, as Michigan (oddly

* Report, pp. 66, 67.

classed with New York) we suspect that he proceeds on very imperfect information. An official report gives the whole number of acres sold in that state, down to 30th September 1837, as 8,894,000, for which were paid 11,186,000 dollars, making the price per acre under 1 dollar 15 cents, or about 6s. sterling, which would be considered low in Canada. The stationary price of wild lands in the latter country is adduced as a striking proof of stagnation and inferiority; yet it appears that such lands in America have not even remained stationary, but have been progressively falling.* It is indeed not a little curious, that while Lord Durham exalts that country for the high price of its land, Mr Shirreff recommends it for the cheap rate at which it can be obtained.

The following is a statement of the number of emigrants from 1821, when the great tide began to flow into Canada. The list, down to 1828 inclusive, professes to include the whole number who went to British America, of whom, however, the Canadian provinces attracted by far the greatest proportion. We suspect, too, that this part of the table is by no means so complete as the rest.

1821,	12,470
1822,	11,282
1823,	8,133
1824,	7,311
1825,	8,741
1826,	12,818
1827,	12,648
1828,	12,084
1829,	15,945
1830,	28,000
1831,	50,254
1832,	51,746
1833,	21,752
1834,	30,935
1835,	12,527
1836,	27,722
1837,	21,901
Total number,	346,269†

* American Almanack 1839, pp. 101, 102. Report, p. 76.

† Quarterly Journal of Agriculture, vol. iii. p. 547. Returns, Emigration 1833, p. 3. Ditto, 1837, p. 9.

The following is a comparative statement of the quarters whence these emigrants came during the last nine years:—

	1829.	1830.	1831.	1832.	1833.	1834.	1835.	1836.	1837.
England and Wales.....	3,565	6,799	10,343	17,481	5,198	6,799	3,047	12,188	5,580
Ireland.....	9,614	18,300	34,133	28,204	12,013	19,206	7,100	12,590	14,538
Scotland.....	2,643	2,450	5,354	5,500	4,196	4,591	2,127	2,224	1,509
Hamburgh and Gibraltar.....	..	..	..	15	..	..	..	..	..
Nova Scotia, Newfoundland, West Indies, &c....	123	451	424	546	345	339	225	235	274
Havre de Grace	..	..	..	..	..	..	..	485	..
Total....	15,945	28,000	50,254	51,746	21,752	30,935	12,507	27,722	21,901

It will thus appear that considerable fluctuations have taken place in the tide of emigration. In 1831 and 1832 it was at its height; but the ravages of the cholera in the latter year, the influx of a number somewhat too great to be immediately disposed of, and the contradiction of the flattering reports previously circulated, caused a signal re-action. In 1834 these impressions subsided, and an increase took place, though not to the former extent. In 1835 there was another fall, partly perhaps from the same causes as before, and probably also from the flourishing state of trade at home. In 1836 the numbers were again augmented, and chiefly consisted, so far as England was concerned, of settlers from the agricultural counties of Norfolk, Suffolk, and Hampshire. In 1837 the amount was somewhat diminished, though still nearly double that of 1835. The reduction from England was 6608, from Scotland 715, but these were partly compensated by an increase of 1948 from Ireland. They were generally in excellent health; none had perished by shipwreck, for in the only two vessels that were wrecked the passengers were all saved. A large proportion, too, were in good circumstances, and carried out considerable property. A great rise has also taken place in the number of emigrants to New York, a considerable portion of whom doubtless

remain in the States; but many also choose this as the most speedy and commodious route to Upper Canada. The arrivals there were in

1829,	11,501	1834,	26,540
1830,	21,433	1835,	16,749
1831,	22,607	1836,	59,075
1832,	28,283	1837,	34,000
1833,	16,100		

In 1833, when 16,100 landed at New York, Mr Hawke calculated that at least 6000 came thence to Upper Canada. If the same proportion were preserved in 1836, the number would exceed 22,000, and in 1837, 12,000.

Mr Buchanan, in his official report published at the beginning of 1838, anticipates that the unhappy insurrection, having been speedily and completely crushed, would be no bar to the emigration of that year. He has been mistaken; for the vague idea of Canada being in rebellion has almost completely deterred settlers, the number of whom did not quite amount to 5000; though, according to the most exact statements, the alarm seems to have had little foundation. The monied interest no doubt suffered from public commotion and the condition of the market in the United States; but the agricultural population were scarcely any where affected. Even in Lower Canada the movements were confined to the French portion of the district of Montreal; the Eastern Townships, where nearly all the British are located, remained in perfect tranquillity. In the Upper Province there was only a rapid flight, and then some border inroads, almost instantly suppressed. The settlers sustained scarcely any inconvenience, except from the call to arms, to which they so nobly responded, and where victory was obtained with little loss. The only thing to be now apprehended are certain marauding attacks on the immediate frontier, which is almost completely settled, while the stations for emigrants, being considerably in the interior, may be considered perfectly secure.

From different quarters we can collect the distribution of the new settlers who arrived at Quebec in the

years 1832, 1834, 1836, and 1837, throughout the various parts of the province.

	1832.*	1834.†	1836.‡	1837.§
LOWER CANADA.				
Quebec,	4500	1500	1000	400
Three Rivers,	450	350	200	300
Eastern Townships,	750	640	6000	1500
Montreal,	4000	1200	1500	1000
Ottawa,	500	400	900	800
UPPER CANADA.				
Eastern Districts,	4000	1000	3600	3000
Midland and Newcastle,	6000	2650	1500	1800
Home,	7500	8000	3000	2000
Hamilton, Guelph, and Huron Tract,	6000	2660	1400	2500
Niagara,	3000	3300	1500	2000
London and Western,	8500	4600	2000	5000
United States,	3346	3485	4973	1509
Died (mostly of cholera),	2350	800	88	92
Returned,	850	350	67	...

The emigrants of 1837 consisted of 11,740 men, 6079 women, and 4082 children. There came out on their own resources 20,330, and by means of parochial aid 1571.

The ports in England whence the settlers of 1837 chiefly sailed were, in the order of importance, Liverpool, Lynn, London, Yarmouth, Plymouth, Hull, Portsmouth, and Bristol; in Ireland, Cork, Dublin, Belfast, Sligo, Londonderry, Limerick, and Waterford; in Scotland, Greenock, Leith, Aberdeen, Cromarty, Glasgow, and Dundee.

We shall now proceed to consider this subject in reference to our other American dependencies.

NOVA SCOTIA.

Emigration does not form nearly so important a question in this as in the more western colonies; for while there is a smaller proportion of good land, the best and most accessible parts are more generally occupied. According to Mr Haliburton the people consider that

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* Returns, 1833, p. 11. † Backwoods, p. 341.
‡ Returns, 1836, p. 10. § Ibid. 1837, p. 11.

they can fill up the country with their own increasing population, and feel no anxiety for any accession from abroad. Yet ample space still remains, since not more than 400,000 acres are under cultivation, and though 5,750,000 acres have been granted, only about four millions are disposed of. Of these, it is true, not above an eighth part are supposed fit for agricultural operations. Crown lands, however, are purchased at an easy rate, sometimes 2s., and never exceeding 3s.; notwithstanding, in the recent tide of emigration Nova Scotia attracted comparatively little notice. The British American and New Brunswick Land Companies contemplate extending their operations thither; but as they have not yet begun, no arrangements have been made or agents appointed to facilitate the location of settlers. We have nowhere found any statement of the annual number. The Passenger Act in 1835 yielded, as formerly noticed, £160, which at 5s. a-head would imply only an arrival of between 600 and 700 from Britain, reinforced probably by a few from the adjoining settlements and the States. The public lands sold between 1834 and 1837 averaged 17,500 acres annually.*

NEW BRUNSWICK.

Considered with respect to emigration this country possesses a great and increasing importance. In point of soil and climate it surpasses any other colony, except Upper and some parts of Lower Canada, and yields little even to the most favoured spots in those territories. It is not, indeed, penetrated by a connected chain of inland seas like the St Lawrence and the lakes, yet its rivers are numerous, several of them very considerable, and, being more rarely broken by falls or rapids, can be navigated almost to their sources, first by vessels of some magnitude, then by barges and canoes. The population

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* Lord Durham's Report, Appendix B, p. 127.

attracted by the lumber-trade creating a necessity for a large import of agricultural produce, does, and during a long time will continue to afford a ready market for all that can be raised within the colony. The passage, too, is somewhat shorter and cheaper. The fare from London is stated to be from £4 to £5 with provisions, or from £2 to £3 without; and from the outports somewhat less. The cutting, sawing, and shipping of the timber afford employment to a large number of able-bodied labourers as well as mechanics. The ignorance that prevailed as to the coasts, and the gloomy expanse of its forests, prevented it for a long time from attracting much notice on the part of emigrants; but within the last ten years these impressions have been removed, and it has drawn a continued succession of large bodies, chiefly from Ireland. There seems, however, no reason why persons possessing a moderate capital should not find there as well as in Canada a profitable investment. In fact this class appear to be turning their eyes to the country, and provision will be made for their reception. Mr Baillie, commissioner of crown-lands, has put forth a statement much dwelt upon by Lord Durham, that most of the emigrants going to that country do not remain, but proceed on to the United States. There is reason to think that the report must have been made somewhat inadvertently when we find the same gentleman asserting that between 1830 and 1837 there were sold 1,339,000 acres of crown-lands, and that most of the purchasers had settled upon the grounds. The increase too of the inhabitants between 1824 and 1834, from 75,000 to 120,000, seems too large to be produced without a considerable accession of strangers.*

At St John is an emigrant-agent, where new-comers can obtain every necessary information, and have submitted to them plans and surveys of land, both crown and private, in almost every variety of situation, condition, and price. Those partially cleared, with suitable build-

* Appendix B, pp. 154, 155.

ings, can be had at from £1, 10s. to £2 an acre: and Mr Wedderburne mentions that at St John he can treat for various spots rated at from £100 to £500. The lowest price of uncleared Government lands was 3s. 6d., and even when put up at 4s. 6d. a considerable advance was often obtained. The terms have hitherto been, as elsewhere, payment in four annual instalments, the first at entry; but by the order of 18th February 1837, it appears that ready-money will be in every instance demanded, and the minimum is now only 2s. 6d. The process of clearing is the same as in other colonies, and on similar grounds is reckoned to cost from £3 to £4.

The New Brunswick Land Company has been formed on the model of those in the Canadas to promote and benefit by the emigration to this colony. They have purchased, in the county of York, a tract sixty miles long, from twenty to thirty broad, and containing 580,000 acres. Though hitherto imperfectly known, it seems justly described as very fertile. It lies indeed at the distance of seventy to a hundred miles from the seacoast, but it enjoys great advantages in point of water-conveyance, having at one extremity a branch of the Miramichi winding through it, while on the other it approaches near to the St John. The former river receives very numerous streams which enrich their banks, and the largest, named the Tauk, is navigable for a few miles. The other side is watered by the Nashwauk, a large tributary of the St John, falling into it opposite Fredericton; and though a good deal obstructed by shoals and rapids, it is navigable forty miles by barges. It receives the Tay, a small stream flowing through a fine country; and the Madamkeswick, much inferior to the Nashwauk, but partly navigable, falls also into the St John. The proprietors have founded the village of Stanley on the Nashwauk, and that of Campbell on the Miramichi.

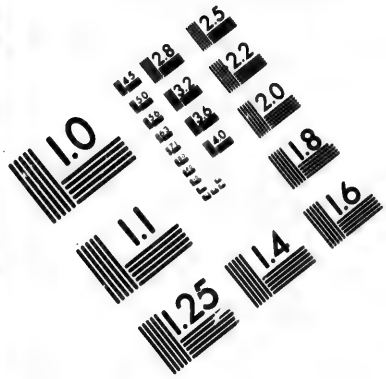
The Company have divided their lands into lots of 100 and 200 acres. On each they have built a log-house, and made a small clearance, which must be cheerful, and on the whole advantageous to the settler. On

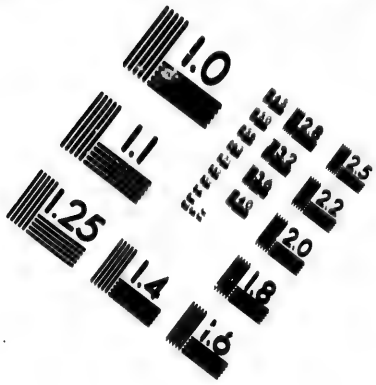
every 100 five are cleared, and the whole are then sold at from 10s. to 15s. sterling an acre. It is required that a fifth of the purchase-money shall be paid down, and the remainder by four annual instalments. This credit is shorter than is granted either by the Canada or British American Land Companies; and, notwithstanding the advantage derived from the clearance, will, we suspect, be considered too limited. In fact, Mr Hayne has found by experience that payments cannot be expected in less than three years. The Company are also willing to clear ground to the extent of [illegible] acres, to accommodate farmers of small capital, receiving a suitable charge for the labour; and it appears that they have already expended £80,000, without any prospect of an immediate return.*

PRINCE EDWARD ISLAND.

This colony possesses advantages which may deserve the attention of certain classes of emigrants. About two-thirds of its surface, as we are informed by Mr Stewart, remain still open for settlement, including a great part of the finest lands. These, indeed, are not immediately on the coast, but a reference to the structure of the island will satisfy any one that they cannot be at an inconvenient distance from the sea. A very small portion is now in the hands of Government, which is offered for sale at from 10s. to 20s. an acre; still by far the greater part, owing to causes already stated, is held in large blocks by absentee proprietors. A vehement call indeed has been made in the colony, and enforced even by some acts of violence, for the forfeiture of all lands which have not been cultivated to a certain extent. Such severity the British Government have properly refused to sanction, but they have urged on the owners the expediency of adopting mea-

* Bouchette, vol. ii. p. 109. Wedderburne, pp. 12, 13, 16. Practical Information by New Brunswick Land Company, 1834. Lord Durham's Report, Appendix B.





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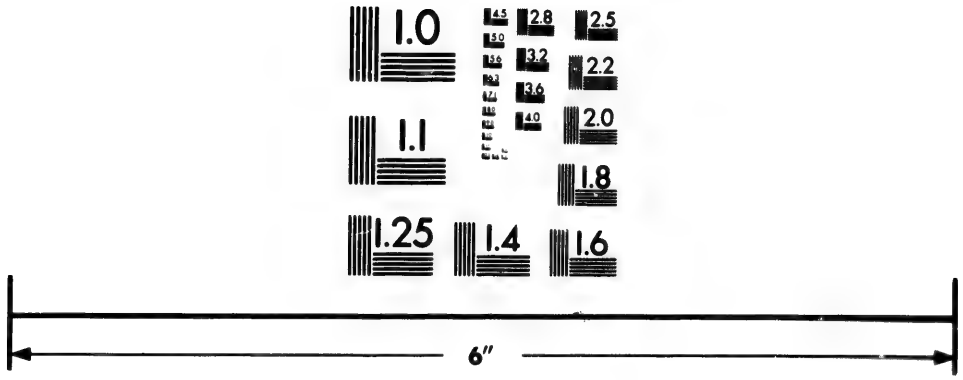

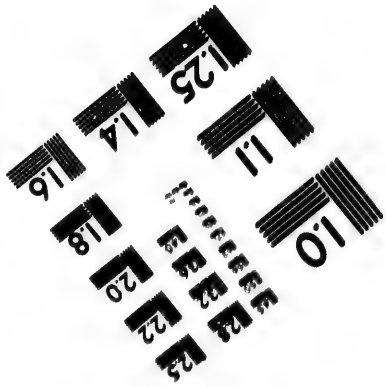

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sures for throwing their property open for settlement; and these last accordingly, in January 1838, submitted to Lord Glenelg the terms on which they were ready to fulfil this object. They are inclined to dispose of the lands either by sale or lease; and in the former case the price would run from 6s. 3d. to 20s., Halifax currency, per acre. The proposed conditions are as follows:—Before entering into possession, the purchaser will be required to pay down 25 per cent., and the remainder, with interest at 5 per cent., in five equal instalments. Upon paying one-half, he is to receive a title-deed in fee simple, and may then even sell to a third party, though the proprietor is to have the option either of him or the new purchaser as his debtor for the balance. The settlers who prefer a lease may have one of sixty-one or ninety-nine years, or for the longest of three lives. No rent is to be paid for the first two years; in the third, it is to be 3d.; fourth, 6d.; fifth, 9d.; sixth, 1s., or £5 for 100 acres, which is never to be exceeded. The payment may, if preferred, be made in marketable produce, delivered at a shipping port; in some cases it will be accepted in labour; and the tenant shall have the option, at any time during the lease, of purchasing on the footing now detailed. These terms were approved by the Secretary of State, and transmitted with a recommendation to Sir Charles Fitzroy, the governor. It is obvious that the arrangement, by which no heavy payments are required during the first years, will be very convenient for settlers of small capital; and such an advantage is not to be obtained in any other colony.

The means of conveyance from the United Kingdom are not so frequent and regular as to the other provinces, for the trade is chiefly confined to Bristol and Biddeford, particularly the latter place. Vessels destined for Miramichi, however, very frequently touch at some point of the island, and would readily agree to do so if even a small party of emigrants wished to engage a passage there. At all events, a weekly steam-packet runs from Miramichi to Charlotte-town, a distance of not more

than 120 miles. There is as yet no agent at the island of Prince Edward appointed by government; but each of the great proprietors has a private one, who would be ready to treat with the settler, and the conveyance to any quarter on which he may fix is easy and cheap.*

NEWFOUNDLAND.

From the description already given of this island it will sufficiently appear, that until the more fertile provinces are occupied, its lands will afford little temptation to the agricultural emigrant. Indeed, our correspondent holds out no encouragement to such a settler. The fisherman may with advantage cultivate a small spot for his own supply, but scarcely with a view to sale. Bold and able seamen, too, ready to brave hardship and peril, may find employment with good wages; and a number with that view migrate from Ireland. A proportion of these, after making a little money, proceed to other colonies, and become landed proprietors.

HUDSON'S BAY TERRITORY.

The only quarter here which could invite emigrants are the banks of the Red River; and the Company would have no objection to the location of settlers in that vicinity. There are circumstances however which, for some time to come, will probably secure a preference to more accessible districts. The vessels, for example, do not arrive till late in the season, after which the adventurer would have upwards of 500 miles to travel without any conveyance except canoes; and as he could

* Emigration, Prince Edward Island, by J. L. Lewellin (London, 1833). A Statement of the Escheat Question, by George R. Young, Esq. (London, 1838). We are indebted to David Stewart, Esq., Great Russell Street, London, for much of the information here given.

not arrive at his destination before winter, he could scarcely have the ground prepared, so as to reap a crop in the following year. For these reasons, as long as there are abundance of settlements accessible by the sea and the St Lawrence, there cannot be any motive for going so deeply into the inland parts of the continent.

CHAPTER IV.

General Summary.

General Retrospect—Extent of British America—Proportion cultivated—Produce—Exports of Timber—Fishery—Agricultural Products — Imports — Shipping — Interior Communications—Those proposed by Mr Buller—Others suggested—Welland and St Lawrence Canals—Population—Different Classes—Church Establishment—Political Constitution—Proposed Union of the Colonies—Other Suggestions—Proceedings on the Boundary Question—Award accepted by Britain—Rejected by the American Senate—Various Negotiations—Encroachments by American States and consequent Dissensions—Violent Proceedings of Maine—Threatened Hostilities—Temporary Adjustment.

Although the different parts of British America have been successively and somewhat fully treated of, there still appears room for a general retrospect, exhibiting that portion of the British empire under a combined view. Some important questions too, in which the several sections are more or less interested, may with propriety be here introduced.

It appears desirable, in the first place, to form an estimate of the entire surface; but as we shall not include mere rocks, and wastes never likely to be turned to any useful account, we necessarily leave out Newfoundland and the Hudson's Bay Territory, although considerable portions of the latter, at some future period, may become valuable. The Bermudas, on the other hand, are too small and detached to be taken into the survey.

We begin with Lower Canada, which, as formerly observed, is estimated by M. Bouchette at 205,863 square miles; but as part of it reaches beyond the fiftieth parallel, which may be taken as the limit of American cultivation, while much of the remainder is unproduc-

tive, 90,000 of these may be deducted. The whole, however, of Upper Canada, Nova Scotia, New Brunswick, and Prince Edward Island, may fairly be included, since, though there are certain waste tracts in them, they possess, upon the whole, rather more than average fertility. We shall then have—

	Square Miles.
Lower Canada,	115,000
Upper Canada,	141,000
Nova Scotia,	15,500
New Brunswick,	25,900
Prince Edward Island,	2,100*
	299,600

The area of Great Britain and Ireland is only 121,853 square miles, not much above a third of that now stated, so that the transatlantic portion of the empire, at present considered only as an appendage, may one day be much the more important of the two.

If from the vast surface of these provinces we turn our attention to the proportion actually cultivated, a striking proof will be afforded of their infant state. The following may be given as the most recent account :—

	Acres.
Lower Canada in 1831, 2,065,000, say now	2,200,000
Upper Canada in 1835,	1,308,000
Nova Scotia,	400,000
New Brunswick,	250,000†
Prince Edward Island,	100,000
	4,258,000,

making only 6650 square miles, or little more than $\frac{1}{30}$th of the whole. It is obvious, therefore, what vast scope is still afforded for industry and an increasing population.

The staple of the colonies as they advance in improvement must be agricultural produce, to be disposed of in exchange for manufactured goods and foreign luxuries. As yet this export is not of very large amount, being lessened by the successive arrival of emigrants, who

* See vol. i. pp. 242, 266; vol. ii. pp. 115, 228, 257.

† Vol. i. pp. 293, 330. Lord Durham's Report, Appendix B, pp. 129, 147, 169.

must for some time be consumers; but there can be no doubt that it will ultimately take the lead of every other. The colonists seem hardly treated in having a duty of 5s. imposed on their wheat, in addition to the heavy freight across the Atlantic; there being no reason why they should in this respect be less favourably dealt with than Ireland. The supply would only increase gradually with the augmenting population of the United Kingdom; nor would it be attended with that uncertainty which is a serious objection to any dependence upon foreign import, while, in return, a sure market would be opened for the manufactures of England.

Timber is a product at present of first-rate importance, though it must gradually decrease with the progress of cultivation. The stock, however, is so immense that ages must elapse before it can be exhausted. Independently of the favour this trade enjoys in Britain, a demand is rising in the Atlantic states, which, being gradually denuded of their own forests, are expected to afford a permanent and increasing market.

Throughout these colonies manufactures must for ages remain confined to a few bulky articles. Under the head of Canada have been enumerated almost all that are at present of any importance.

The commerce of British America has already been treated at considerable length when considering the statistics of its different provinces; but there still appears room for some general statements, which may exhibit the whole under one view.

Wood and lumber in various forms comprise as yet the most important branch. The mode of procuring and preparing them, with the encouragement afforded to the sale in Britain, have been already described. Canada still yields the largest and most valuable supply; New Brunswick, which ranks next, is little inferior; and Nova Scotia with its adjacent islands, though much lower, is still considerable. The following table exhibits the value of each description exported during the four years from 1832 to 1835 inclusive:—

	1832.	1833.	1834.	1835.
Oak timber	£49,341	£51,111	£50,641	£40,357
Pine	413,582	344,015	494,298	592,510
Elm	20,756	12,157	2,973	16,439
Ash, birch, &c.	18,183	56,236	56,476	38,467
Masts, yards, &c.	23,177	14,470	20,544	18,743
Oars	3,804	3,190	4,055	2,427
Deals, planks, boards, &c.	314,931	337,303	398,237	359,229
Shingles	8,162	9,316	10,154	8,217
Lathwood	8,712	7,320	7,247	11,495
Staves and headings	99,119	110,594	187,490	154,575
Other sorts	3,542	4,673	5,524	6,928
Total	£963,309	£950,385	£1,237,639	£1,249,387

Of these different kinds the timber, understood to be in log, goes almost exclusively to Great Britain and Ireland. Of that which is sawn into deals, boards, and planks, the West Indies take nearly a half, as well as a large proportion of the masts, oars, staves, headings, and all the shingles. The amount sent to foreign countries is inconsiderable.

The fishery, which forms the next article, decidedly rivals the timber-trade, especially when we include the capture of seals, which in mercantile language is considered a branch of it.

	1832.	1833.	1834.	1835.
Cod, dry	£447,654	£591,844	£545,654	£566,054
.. wet	29,393	34,056	43,569	47,139
Herrings	6,074	3,751	2,593	3,565
Mackerel	2,929	1,598	3,602	2,625
Salmon	9,977	9,235	12,748	14,965
Other fish	8,381	5,277	6,133	7,318
Total fish	£504,408	£645,761	£614,299	£641,866
Train oil	248,064	242,412	205,260	265,976
Seal skins	40,352	27,911	30,414	44,321
Produce of fishery	£792,824	£916,084	£849,973	£952,163

The dry cod is so important an article, and the quarters to which it is exported so various, that we shall exhibit the principal countries under a tabular view.

	1832.	1833.	1834.	1835.
Great Britain	£18,342	£25,028	£19,972	£24,126
Ireland	13,246	25,796	14,923	19,117
Portugal	106,406	86,520	181,582	186,609
Spain, with Gibraltar	51,090	114,414	69,066	91,380
Italy	50,631	80,808	71,748	26,586
British West Indies	152,418	187,306	146,022	167,645
Brazil	44,391	48,724	25,181	31,282
Other States of South America	....	....	7,300	9,651

The wet cod, herrings, and mackerel, are sent mostly to the West Indies, with a proportion, however, to the United States, which forms the chief market for salmon. The train-oil is brought almost entirely to Great Britain and Ireland; but of the seal-skins, a full half is taken by the States.

The articles next in importance consist in the produce of land, such as grain, live stock, and salted provisions. These, for reasons already noticed, are not yet of first-rate consequence, nor have they even within the last few years been increasing; though, it is obvious that, if the colonies continue prosperous, they must become the most valuable of all.

	1832.	1833.	1834.	1835.
Wheat	£177,434	£174,745	£99,411	£12,100
Other grain	1,942	1,212	1,488	2,903
Wheat flour	57,436	93,304	43,223	74,877
Other flour or meal	1,046	1,581	1,254	468
Beef, pork, bacon, &c.	31,543	47,958	19,915	17,959
Bread and biscuit	....	1,970	964	878
Butter and cheese	4,221	3,166	4,265	4,497
Horses	610	933	33	7,099
Cattle, sheep, hogs	2,043	653	461	725
Total	£276,275	£325,522	£171,014	£121,506

The wheat is exported almost exclusively to Britain; the flour, other grain, and salted provisions, to the West Indies. A large stock of horses, too, was in 1835 sent from Nova Scotia to the United States. Small quantities of beef and pork are sometimes procured from the latter country and re-exported.

There are several other articles of considerable value; such as ashes, shipped from Canada to Great Britain, coal and gypsum, from Nova Scotia, Cape Breton, and New Brunswick, to the United States; and salt from the last-mentioned colony, sent to the same quarter. The amount has been given as follows:—

	1832.	1833.	1834.	1835.
Ashes	£201,717	£174,468	£108,307	£181,506
Coals	27,870	32,350	21,660	23,930
Gypsum	16,269	34,224	23,250	16,980
Salt	13,312	7,617	4,850	7,173
Total	£259,168	£248,659	£158,067	£229,589

Sugar, rum, and similar produce obtained from the West Indies, are re-exported in small quantities to Britain, other parts of Europe, and the United States.

We may now form a general summary of the exports for the period just specified.

	1832.	1833.	1834.	1835.
Timber	£963,309	£950,385	£1,237,639	£1,249,387
Fishery	792,824	916,084	849,973	952,163
Produce of land	276,275	325,522	171,014	121,506
Ashes, coals,	259,168	248,659	158,067	229,589
Miscellaneous	159,313	172,887	194,325	154,049
Total	£2,450,889	£2,613,537	£2,611,018	£2,706,694

The countries to which the principal exports took place were these :—

	1832.	1833.	1834.	1835.
Great Britain	£1,428,598	£1,376,333	£1,429,768	£1,479,177
Ireland	210,546	287,593	291,673	240,818
Portugal	107,786	87,086	185,025	193,394
Spain, with Gibraltar	52,470	124,944	70,628	94,893
Italy	55,457	85,287	77,348	30,531
British West Indies	397,449	434,536	386,361	446,500
United States	129,278	131,883	95,787	149,212
Brazil	46,124	50,766	26,017	37,206
Other States of S. America	....	....	7,301	10,176
Various	23,186	35,109	41,110	24,787

The imports, as we have had frequent occasion to observe, are exceedingly various, including almost every article beyond the common necessaries of life. The leading branches are manufactured goods of all descriptions, almost exclusively furnished by Britain ; tropical produce, chiefly from the West Indies ; wine and other products of the more southern climates, usually introduced through the medium of England or Gibraltar. Lastly, though grain and provisions are generally an export staple, yet Newfoundland and New Brunswick, subsisting almost entirely by fishery and the timber trade, are obliged to import large quantities. The supplies drawn from the other colonies do not appear in the returns, which comprehend only what is obtained from Britain and Ireland, from Hamburgh, and the United States.

Manufactured Goods.	1832.	1833.	1834.	1835.
Apparel and slops	£65,979	£60,786	£59,873	£74,791
Books	11,179	13,076	10,692	11,879
Brass and copper	4,656	3,101	2,309	2,417
Cabinet wares	9,445	7,019	7,227	6,275
Candles	12,338	16,528	12,333	11,896
Copper, sheet, &c.	7,449	19,709	13,074	10,17[illegible]
Cordage	64,962	51,789	54,780	47,779
Cottons	450,325	376,583	289,954	493,119
Earthen and China ware	27,976	27,330	21,218	22,069
Fishing tackle	29,104	26,329	22,977	23,771
Glass	82,230	90,756	91,267	105,595
Guns	3,338	2,804	2,226	1,595
Gunpowder	8,918	5,305	3,092	3,547
Haberdashery	88,733	80,394	70,489	90,604
Hardware and cutlery	116,241	111,266	82,982	82,96[illegible]
Hats	35,204	26,644	23,145	25,455
Hemp	5,800	5,841	4,703	2,147
Iron, bar and pig	40,154	33,229	34,898	39,713
.. wrought	93,189	111,590	89,476	81,681
Leather	71,398	67,047	54,372	18,324
Linens	98,451	97,855	69,891	114,381
Musical instruments	4,718	3,080	1,956	3,192
Painters' colours	18,183	23,089	14,564	16,279
Silk	94,734	89,077	71,049	86,774
Soap	30,760	30,857	24,236	28,102
Stationery	33,611	41,095	31,595	31,664
Woollens	352,899	366,137	249,149	394,811
	£1,870,924	£1,831,059	£1,413,577	£1,631,001
Tropical Produce.				
Coffee	£9,021	£8,786	£13,744	£5,804
Dye and hard woods	5,327	4,054	10,508	4,133
Gum Senegal	19,520	..	..	..
Indigo	5,781	2,591	3,107	5,645
Molasses	80,074	67,999	66,779	79,519
Pepper and pimento	5,128	3,209	3,365	2,819
Rum	235,285	190,474	191,590	228,223
Sugar, raw	122,073	118,656	112,891	111,906
.. refined, British	26,649	44,570	36,008	35,577
Tea	146,016	240,383	156,565	104,974
Tobacco and snuff	21,401	19,599	18,695	24,287
	£676,875	£700,100	627,960	602,887
Olive oil	£7,310	£4,689	£6,682	£3,495
Brandy, Geneva, &c.	55,559	82,324	42,900	62,995
Wine	99,539	111,414	70,003	72,560
	£162,408	£198,427	£120,585	£139,050
Grain, Provisions, &c.				
Beef, pork, &c.	£80,227	£108,359	£80,898	£71,132
Beer and ale	7,105	6,887	5,753	5,109
Bread	59,089	86,986	78,372	60,283
Butter	29,325	41,647	25,304	31,309
Grain, flour, &c.	234,768	270,949	217,455	200,081
Fruit	29,699	19,650	20,596	15,339
Live stock	2,500	1,639	1,872	771
Potatoes	..	5,942	3,654	1,782
	£442,713	£542,176	£442,904	£385,806
Coals	£20,541	£24,655	£22,587	£17,894
Train oil	21,333	8,132	34,755	18,959
Salt	31,950	30,993	30,455	40,326
Tallow	13,736	12,518	6,023	6,811
	£87,560	£83,998	£99,820	£83,990

The following exhibits a summary of the above :—

	1832.	1833.	1834.	1835.
Manufactured goods	£1,870,924	£1,831,659	£1,413,577	£1,831,001
Tropical produce	676,875	700,180	627,860	602,887
Wine, &c.	162,408	198,427	128,585	139,050
Grain, provisions, &c.	442,713	542,178	442,994	385,806
Coals, salt, &c.	87,560	83,988	99,820	83,990
Miscellaneous	217,240	223,473	187,580	276,990
	£3,457,720	£3,579,905	£2,900,416	£3,319,724

Countries from which imported :—

	1832.	1833.	1834.	1835.
Britain	£2,209,653	£2,267,235	£1,777,238	£2,330,243
Ireland	63,359	53,084	43,815	44,764
Guernsey and Jersey	21,114	21,933	18,453	18,162
Germany, with Prussia	45,174	118,415	110,691	99,122
Portugal	13,267	19,788	12,579	14,122
Spain, with Gibraltar	40,261	36,557	24,943	16,938
Italy	6,409	6,579	917	56
Africa	10,695	7,619	7,316	2,655
China	145,575	239,282	138,539	54,237
British West Indies	437,807	355,310	386,324	403,664
Foreign do.	8,691	7,753	11,950	8,776
United States	386,081	413,658	299,237	271,065
Brazil	3,908	8,000	8,048	15
South Sea Fisheries	19,828	6,234	36,755	17,880
Various*	45,898	18,458	22,920	38,025

The following is a statement of the shipping employed during the same years, in the trade between Great Britain and these colonies :—

Years.	Inwards.		Outwards.	
	Ships.	Tons.	Ships.	Tons.
1832	1869	503,325	1867	487,526
1833	1895	512,627	1766	421,165
1834	1900	523,055	1877	502,515
1835	1911	540,325	2139	616,716

The whole amount employed by the colonists in their intercourse with all parts of the world was much larger : being in 1835 not less than 10,009 ships, 1,199,628 tons inwards ; and 9301 ships, 1,151,181 tons outwards.†

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* Compiled from Colonial Tables 1832, p. 139-154 ; 1833, p. 131-147 ; 1834, p. 123-139 ; 1835, p. 99-115.

† Ibid. 1834, pp. 121, 122 ; 1835, pp. 4-10, 13, 15.

A recent parliamentary paper shows the amount of shipping built in British America from 1814 to 1837.

Years.	Vessels.	Tonnage.	Years.	Vessels.	Tonnage.
1814.....	83	9,353	1826.....	462	77,675
1815.....	150	16,520	1827.....	418	61,009
1816.....	291	25,448	1828.....	377	45,247
1817.....	202	16,910	1829.....	332	32,156
1818.....	192	13,243	1830.....	269	26,566
1819.....	215	16,588	1831.....	285	29,184
1820.....	153	11,383	1832.....	289	34,791
1821.....	174	11,884	1833.....	337	45,037
1822.....	137	12,212	1834.....	333	51,168
1823.....	188	19,135	1835.....	350	54,787
1824.....	252	39,469	1836.....	337	58,987
1825.....	422	69,616	1837.....	370	60,672

There is perhaps no object at present of so great importance for the advancement of industry in the colonies as the formation of roads and other means of internal communication. Nearly the whole water frontage, to a considerable depth inland, has now been occupied; and the inhabitants of the interior tracts, from their remote situation, are incapable of procuring in exchange for their produce the luxuries or even the comforts of life. This evil, however, through the efforts of modern ingenuity, may be almost completely remedied by the construction of canals and railways; and the strong recommendations of Lord Durham and Mr Buller give reason to hope that such works will erelong be commenced on an extensive scale. Yet it is impossible not to look with some degree of apprehension to these undertakings, when we recollect the Grand and Royal Canals in Ireland, the Caledonian in Scotland, and the Rideau in Canada, on which enormous sums have been expended with little or no practical benefit. Even the Welland and the Ship Canal of the St Lawrence, though spirited attempts in an infant colony, were premature, and accordingly remain yet incomplete. The La Chine Canal and the La Prairie Railroad are perhaps the only similar works in that country which have been of much real use. The danger arises not merely from jobbing, though this cannot be too carefully guarded against, but

also from the influence of popular assemblies and ardent patriots, who are not always good judges of what will benefit industry. Works of an imposing aspect, of great extent, connecting distant parts, and overcoming vast obstacles, are those which rouse enthusiasm and afford a subject for eloquent declamation. There is then but little leisure to discuss the humble but all-important question, what traffic is likely to pass along the line. We feel the more alarmed, too, as some such impulses appear to have suggested certain of Mr Buller's recommendations, and which, for that reason, we shall take leave to sift somewhat carefully.

The most extensive is the proposed railroad from Halifax to Quebec, which has, we presume, been substituted for that lately projected from St Andrews, in New Brunswick.* The distance may be about 700 miles, and the expense must considerably exceed one million sterling, while there is great reason to doubt whether any benefit would be reaped at all commensurate to this expenditure. There cannot be much commerce between two countries, of which the productions are nearly identical, the one having scarcely a surplus article of which the other has not also more than enough. It appears to be supposed, indeed, that Halifax would thereby become an outport to Quebec, and that shipmasters, to avoid the tedious and somewhat dangerous circuit by the St Lawrence, would prefer landing their goods on the Atlantic coast, to be forwarded by railway to the latter city.† We cannot help suspecting, however, that the merchants would incur some delay, and even a small risk, to have their goods brought close to the warehouses, and unshipped under their own eyes, rather than have them landed at the distance of 700 miles, conveyed over that long space in carriages, at all seasons of the year, and then put on board again to cross the St Lawrence. In an agricultural view, nine-tenths of the line are of no value; and though some scattered settle-

* Lord Durham's Report, Appendix B, p. 35. † Report, p. 114.

ments might spring up in consequence, this would be in direct opposition to Mr Buller's plan of condensing the population, and filling up the thinly peopled districts, already occupied by colonists. It would also be very unjust to lay heavy taxes on the proprietors of those lands, not that emigrants might be brought thither, but rather that they may be carried away to new and remote regions.

Another scheme which has been favourably received, is that proposed by Mr Shirreff of Fitzroy, of a navigable communication between Lake Huron and the Ottawa, combined with the improvement of the upper part of that river.* These, no doubt, are important objects, and may be realized at a future period; but any attempt to accomplish them at present seems wild in the extreme. There is not, it is probable, on the whole line of the proposed navigation a single human dwelling, except a few Indian wigwams; nor is there, perhaps, a cultivated field within a hundred miles of either end of it. Supposing a few settlers to be drawn into this vast wilderness, the alluring them thither would, on the grounds above stated, be contrary both to policy and justice. In regard again to commerce with the infant states of the north-west, it would be easy to show, that any expectations under this head must be altogether premature.

A railroad between Lakes Ontario and Huron is also mentioned. Such a work will unquestionably be of essential importance, and that, too, at an earlier period than either of the others. But at present the shores of the last-mentioned expanse are little better than a desert.

It may now be expected that we should endeavour to suggest what might be considered as the lines really useful for opening up districts still languishing for want of communication. We shrink not from this task, for which the minute inquiry requisite for preparing the chapters on topography have in some degree prepared us.

* Report, Appendix B, pp. 35, 116.

We do it, however, with great diffidence, as without regular surveys made for the express purpose, the adaptation of a country for such objects can never be fully ascertained.

One important question not very easily decided is that which relates to the comparative advantage of railways and canals. So far as we can form a judgment, the former may be said to supply the more rapid and commodious conveyance, and also to be in general the more easily constructed work. But a canal seems to afford a much cheaper mode of carrying a great bulk of heavy goods; and for this reason it is still used in preference, even since the rival communication has been formed between the same points.* Where two great waters are to be united, a canal has also this advantage, that the cargoes can be conveyed in a single vessel from the shores of one to those of the other without the expense and risk of being landed and reshipped. But at all events, of whatever nature the channels of intercourse may be, they ought to be numerous, simple, and practical, rather than splendid and costly. We should likewise prefer to see employed upon them American engineers, accustomed to combine cheapness with utility, rather than Europeans ambitious of producing a magnificent work with a proud disregard of expense.

With regard to Lower Canada, the most important line, we presume, would be an oblique one from Quebec to Montreal, on the southern side of the St Lawrence, as nearly as possible half way between the river and the frontier. At St John it would connect itself with the La Prairie Railway, and by means of Lake Champlain secure a communication with the United States. It appears to us that this would open the country much more completely than one from north to south, as proposed by Major Head,† while its benefits could be amply diffused by lateral communications. The hilly nature of many

* M'Culloch's Dictionary of Commerce, art. Railroad.
† Lord Durham's Report, Appendix B, p. 72.

of the tracts would, no doubt, oppose obstacles and require modifications ; and in these circumstances a railway might be the most easily formed, and perhaps prove more convenient. The staple, being live-stock, is less bulky than grain, and more difficult to convey by water. A speedy mode of travelling between the two capitals would also be exceedingly beneficial.

The eastern districts of Upper Canada enjoy considerable advantages, having the St Lawrence on the one side and the Ottawa on the other. Yet a railroad from Montreal, running midway between the two till it should strike the Rideau, would be of obvious benefit to the inland townships, and afford, at the same time, a direct and rapid conveyance to Kingston.

In the three central districts it would be an object of the greatest importance to form lines stretching from the border of Lake Ontario northward into the interior. The Midland is well cultivated along the shore, but the inland part is less known, partly, it may be, from the want of a good communication. Some one ought unquestionably to be formed, though our knowledge of the country is too limited to enable us to determine what should be its precise nature or line.

The Newcastle District is of more importance, having many fine townships, chiefly in the interior. About twelve miles from Port Hope is Rice Lake, and beyond a long chain of smaller and closely contiguous ones. It would seem that the best communication here would be accomplished by short canals connecting these waters with each other and with Ontario ; for while one vessel would serve to convey produce from the remotest of them, railways could not fail to lead to much inconvenience in landing and reloading. The river Trent issues from Rice Lake, but its course is very winding, and terminates in the intricate shores of the Bay of Quinté, so that we doubt both whether it would repay the expense, and also if it would be expedient at present to incur that of a double line for the same tract of country.

In the Home District it would be most desirable to

connect Toronto with Lake Simcoe; and for the reasons just stated, there seems to be a great advantage in accomplishing this by a canal, which at no distant period might be carried on to the Georgian Bay on Lake Huron, where it would open up a vast extent of land for location.

In regard to the London and Western Districts, there is an obvious call for a communication westward from the extremity of Lake Ontario. A railroad in this direction, as well as to Lake Simcoe, was planned and indeed voted by the Assembly, but never begun, we believe, for want of funds. Without expressing any decided opinion, we take leave to suggest the question whether a canal, connecting itself with the navigation of the Thames and by a short cut from that river with Great Bear Creek, would not be more advantageous. It might be ultimately carried to the main body of Lake Huron; and as the staple of all those districts is grain, a heavy and bulky article, great advantages would arise from this continuous navigation.

These works would, we think, place every part of the Canadas within a moderate distance from water and railway conveyance. The cost would not probably much exceed a million sterling, while the entire length would not be greater than that of the single railway proposed between Halifax and Quebec. They would require, however, to be followed up by good common roads; and as the formation and management of these would be peculiarly liable to all the evils incident to public undertakings, there would be a great advantage in securing, as the basis of the fund for defraying the expense, a local contribution among the owners of land. With respect to the roads lately made throughout the Highlands of Scotland, the course taken by Government was to double every sum raised for the purpose among the proprietors, and under this system most extensive benefits have been conferred on that tract of country. It is true that where a wild district is to be newly opened, there must be roads before there can be

settlers to aid in making them; but, according to Mr Buller's opinion, in which we incline to coincide, the preparatory step would be most successfully taken by companies or capitalists, whose eyes would be enlightened by personal interest. Hence it is perhaps desirable that such persons should take the lead and be merely seconded by Government.

With respect to the other colonies there appears not room for so many observations. Nova Scotia, owing to its peninsular form and small breadth, stands much less in need of such works, while its rugged surface would render the task extremely difficult. The completion of the Shubenacadie Canal is a matter of obvious importance, to which we may add the cut from St Peter's Bay in the Bras d'Or, Cape Breton. That of Bay Verte is desirable, but rather, it should seem, for mercantile than for agricultural purposes. The wants and capabilities of New Brunswick on this head are not much known. Generally speaking, its sea and river frontage is not filled up to a great depth, and there is yet little call for throwing open the interior. Short communications leading inland from the lower course of the great rivers seem at present most required, nor does there appear any objection to second in some degree the efforts of the Land Company established in that province.

It may be proper, before concluding, to notice those immense works undertaken by the Government of Upper Canada, and still unfinished. We have already expressed our regret that the large sums expended on them should not rather have been laid out on less ambitious but more practical objects. However, as they are in great part executed, it is unfortunate that they should be allowed to remain wholly useless by being incomplete. Lord Durham has indeed recommended in the strongest terms that they should be finished by means of a loan raised by the British Government on the security of the future tolls. He even anticipates that the whole of the immense traffic which now passes along the Erie Canal will then take this new channel and enrich Canada immensely.

This conclusion we suspect to have been formed under the influence of representations made by some of those sanguine patriots who, as already observed, are so apt to mislead on such occasions. They maintain that Montreal, being somewhat nearer to Lake Erie than New York, will then be generally preferred by the Americans; forgetting that a vessel after arriving there is still far from the ocean. At the same time we do not mean to express any doubt that the works would ultimately pay. Independently of the growing produce of Upper Canada, as soon as Cleveland, Detroit, and other towns on Lake Erie shall rise in importance, their merchants will more and more prefer the employment of the largest vessels which can pass through these canals, and thus make the entire voyage direct to the Atlantic states, and even to Europe, without any need of transhipment. It were much to be regretted, therefore, if those works were not to be kept up in their present state, which yet cannot be done without some annual expense. If, then, it shall appear probable that, when completed, they will yield a return in any degree equivalent to their cost and the low interest at which a loan guaranteed by the British Government might be raised, the aid of the imperial treasury might be afforded with great advantage.

To present a general view of the population of the North American colonies, we shall here give, in regard to each, the date and amount of the latest census, and in another column the probable number at present, allowing for defects and subsequent accessions.

	Latest Census.		Probable present Amount.
	Date.	Number.	
Lower Canada	1831	511,917	660,000
Upper Canada	1835	336,461	420,000
Nova Scotia	1827	123,848	170,000
Cape Breton	..	18,700	28,000
New Brunswick	1834	119,457	130,000
Prince Edward Island	1833	32,292	40,000
Newfoundland	1836	70,957	75,000
Total	.....	1,213,632	1,523,000

Of this number about a third are of French origin, being in Canada called *habitans*, in Nova Scotia and New Brunswick *Acadians*. The basis of the British population was formed by military settlers, but never rose to any great amount till the influx of loyalist refugees from the old colonies after their separation. The citizens of the United States have more recently entered and squatted in considerable numbers along most of the frontier districts. The greatest accession, however, has been derived from immigration, which, since the beginning of this century, and particularly during the last twenty years, has poured in a continued stream, filling with people extensive regions that were formerly desert. A population of a somewhat rude and peculiar character was created at an early period by the fishery in Newfoundland, and another more recently by the timber-trade in Canada and New Brunswick. In each of the provinces there still remains a handful of native Indians. The habits and character of these different classes have been treated at some length under the respective heads.

One of the questions at present most agitated in the colonies is the important one which respects the provision for religious instruction. It is discussed with considerable warmth in the Canadas, where, as already observed, a large allotment of land, which circumstances are now rendering of great value, has been set apart for that purpose. In 1836, fifty-seven rectories, with parishes corresponding, were established in Upper Canada, whereby it was alleged that the English church had been erected into a dominant establishment. The points in dispute are, first, whether the ministry should be supported, as in the United States, on the voluntary system by the contributions of the hearers, or whether provision should be made by the state; and then, in the latter case, on what religious persuasion the endowment should be conferred. As to the first question, this evidently is not a place to enter upon the discussion of it; and if the voluntary principle were adopted, all inquiry

as to the rule of distribution would of course be superseded. But if the numerous party who think that religious instruction should be provided by the state shall prevail, the second question will become more difficult and pressing.

In both sections of Great Britain, notwithstanding very extensive dissent, one form of religious profession is so preponderant as to be more than equal to all the others put together. But in the colonies, with the exception of the Catholics in Lower Canada, there is no such ruling sect. The Church of England forms only a small minority, and will likely continue so, as the emigrating class will, it is probable, always include a great proportion of Dissenters. The exclusive endowment of this church, therefore, though advocated with zeal by some powerful individuals, could not take place without the deepest discontent in the great body of the community. The members of the Church of Scotland are considerably more numerous, and many of them highly respectable; on which account there does not seem any reason, especially after the example of India, why provision should be denied to them. These remarks were, in July 1838, urged forcibly, though perhaps too warmly, in a memorial to Sir George Arthur, by Mr Gale, moderator of the Presbyterian Synod.* But there are, moreover, the two sects of Methodists and Baptists, who, with the Scotch Seceders, are perhaps more numerous than both the established churches put together. These cannot well be classed as Dissenters in Canada, because many of them originally came from the United States, bringing their creeds along with them; and if on any occasion they cultivated spiritual ground that had been left unoccupied by others, this only increases their claims to regard. It will not be denied by any that they are capable of forming virtuous men and loyal citizens; and those who regard a public provision for religion as a great good must own that to deprive it of the greater part of a community

* Correspondence on the subject of Rectories (27th March 1839), p. 62, &c.

is inflicting a severe hardship. In short, if an endowment is to be given to the clergy, we do not see how the rights or peace of the colony can be secured without including the several classes now mentioned.

There still remain the Roman Catholics, also a numerous body, respecting whom there may be greater difficulty. The largest proportion are in Lower Canada, where their priests are satisfied with their condition; and it is worthy of remark, that religious dissension had no part in the recent disturbances. But the members of this church abound also in the other colonies, being augmented by the large immigration from Ireland; and to exclude them from all share in the distribution would be to plant a deep root of discontent in the colonies. It is impossible not to respect the scruples of those who object to their admission, yet even they will surely acknowledge that it is far better to be a good Catholic than be without any religion at all,—a result to which such an exclusion would almost necessarily lead. We have no doubt that the refusal of aid would both aggravate the evils of their system and diminish the chances of conversion, which it were more desirable to see produced by argument than by privation. Considering that a provision has been made for this class of clergy in the three presidencies of India, we do not see how it can be reasonably objected to in the American colonies.

By papers just laid before Parliament, it appears that Government are anxious to settle this question in a manner that may prove satisfactory to the different parties. Lord Glenelg, in his despatch of the 26th December 1837, suggests the adoption of a principle which is said to have been introduced with happy effects in the Australian colonies. It is, "that the contributions of the state towards the support of the different Christian communions should be regulated by the extent of the voluntary efforts which the members of each should make for the promotion of the same general end." This seems, on the whole, in the circumstances of a young and growing country, the best compromise that

can be proposed; but it does not appear, by the latest accounts, that any adjustment of this difficult point has yet been effected.*

The political constitution of the British colonies has been exhibited in considerable detail, and its merits canvassed, under the heads of the respective countries. The general character of all is nearly uniform. A governor, nominated and removed at will by the sovereign, represents the supreme executive power. He is assisted by a council, also appointed or at least sanctioned by the crown, and who, in practice at least, being permanent, have usually administered all provincial affairs. But this part of the system has been largely broken in upon, in order to satisfy the other branches of the Government; the principal of which is a popular assembly, elected by almost universal suffrage, and without any of those aristocratic influences which operate so strongly in England. They possess functions nearly similar to those of the House of Commons, except that the same necessity has not been felt of bringing the executive department into harmony with the representative; on the contrary, the two powers have in many instances continued long in direct opposition. The political structure is completed by a legislative council, whose members are nominated by the crown, on the recommendation of the governor, and hold their seats for life. This branch, since the commencement of political agitation, has, still more than the executive, undergone violent collisions with the popular assembly. It still possesses however a negative on all bills sent up from that body, and the same power is vested in the governor; besides which, the British cabinet can, at any time in the course of two years, disallow even an act which has passed through the whole circle of colonial legislature. Nor is this last prerogative, as in the case of the monarch, nominal and obsolete, but, on the contrary, is in a course of habitual exercise. No new taxes can be imposed without the consent of the

* Correspondence on the subject of Rectories (27th March 1839), p. 44.

several assemblies; and those actually levied are exceedingly light, since the heaviest article of expenditure, being that for naval and military defence, is provided for by the mother country.

With this constitution the colonies appeared for a long time to be exceedingly well satisfied. Content with security of property and freedom from arbitrary taxation, the popular branch scarcely aimed at any thing further, or made any efforts to control the executive. But since the members have grown in wealth and numbers, political agitation has become familiar to them, and they have made several attempts to enlarge their power. They have even on some occasions sought to extend their privileges by rash and violent means, and have been obstinately opposed by the other branches of the Government. Under the head of Canada, where these evils have been particularly conspicuous, we have already endeavoured, as far as possible, to trace their origin and to suggest a remedy.

This, however, seems the proper place to discuss the proposition which Lord Durham has, with much ability, supported for a general legislative union of the colonies. He urges that many common objects might thereby be better provided for; while the animosities arising from race and local faction would be in a great measure removed. More enlarged views would be inspired into the colonist, who now feels "the deadening influence of the narrow and subordinate community to which he belongs." In his own and in the surrounding colonies, "he finds petty objects occupying petty, stationary, and divided societies. The influence," it is observed, "of the thoughts, feelings, and habits that prevail in a great nation like the United States subjects the small adjacent communities that are nominally independent of them." Such a union, too, would afford scope for "the legitimate aspirations of active and prominent persons, would elevate and gratify their hopes," and afford the means of "pacifying the turbulent ambitions, and of employing, in worthy and noble occupa-

tions, the talents which now are only exerted to foment disorder."*

It is difficult to estimate the effects of an arrangement for which there exists no closely corresponding precedent. The different states, though not very remote, stand a good deal detached; and, so far as we can learn, the smaller ones are decidedly adverse to the union. They are aware that their deputies would be thereby exposed to increased expense, and they could hardly be expected to intrust their local concerns to a large convention, in which they would form only a small minority. The change, therefore, there is reason to fear, would lead to dissension, and that, too, at a time when it is particularly desirable that agitation should subside. But, supposing it effected, would it not loosen, if not ultimately sever, the ties with the mother country? Lord Durham urges, that it would have the contrary effect, but upon grounds that seem rather vague and speculative. When, for instance, he states, as one of his main arguments, that it would secure the colonies against any undue interference on the part of the mother country, does he not admit that it would confer on them a greater independence; and might not this be employed equally in resisting due interposition? Supposing them seized with the common mania of excluding foreign manufactures, and forcing their own into premature use, would not the means of carrying out this erroneous view be greatly augmented; and might not the new nationality thus created be apt to kindle the ambition of appearing as a distinct country on the theatre of the world?

We are thus led to inquire, whether there is no other plan by which Lord Durham's objects might be accomplished in a greater degree, without the objections to which his project is liable. But before entering upon this point, we shall make a few observations on the question, whether Britain can secure, and whether she ought to seek, the maintenance of her connexion with those colonies.

* Report, p. 112-114.

Ever since the era of the independence of the United States, it has been customary with numerous politicians to consider the separation of colonies from the mother country as a result depending only on time, but which must arrive at no very distant period. We incline to think that in this case due allowance is not made for the great difference of circumstances. It is needless to dwell now on the gross errors of which the British Government is universally allowed to have been guilty, and the difficulty with which many Americans were persuaded to join the insurrection. It is still more important to observe, that the main body of that people were sprung from ancestors whose derivation from England was only matter of history, having taken place two centuries before, and under circumstances not particularly calculated to rivet their affections to her. The case was the same in the Spanish settlements, which, besides, were grossly misgoverned by a tyrannical oligarchy. But in our present colonies, a majority of the inhabitants (the French part excepted) have recently left Britain, and retain an attachment to her, rendered only more deep and tender by the separation. They have, accordingly, amid some discontents, shown the very reverse of any disposition to sever the connexion; and the same cause is likely to operate with augmented force for several ages. It may also be observed, that space is becoming every day a less important element in human affairs. Steam navigation has already reduced America to less than half the distance; and continued improvements will probably render it no longer difficult for a people having a common origin, language, and manners, to form one nation, though placed at the extremities of the globe.

Some able writers have contended that colonies are of no real use to Britain, and that their withdrawal would be no detriment. Without disputing that, though deprived of them, she would still be great and prosperous, it may yet be observed, that extensive kingdoms, if well governed, possess many advantages. They have greater means of defence against foreign aggression;

improvements are more easily diffused over a wide surface; and commercial intercourse, which between foreign nations is still subjected to many restraints, is systematically encouraged. The natural feeling of affection and importance, which such a relationship inspires on both sides, and especially on that of the mother country, makes the act of severment painful to both, and productive in many cases of the most calamitous consequences.

For these reasons we incline to look forward with hope to the continued connexion of the North American states with their father-land. Still we admit there is room for doubt, whether, as they advance to greatness, they will be content to remain on that dependent footing, upon which, as colonies, they were originally founded, and in which, perhaps, there is too strong a disposition in the parent state to retain them. We have already concurred with Lord Durham in the opinion, that they must be left in a great degree to the management of their own internal concerns. But the want of all influence on the general affairs of the empire might still seem to leave them in an inferior position. "The colonist of Great Britain," says his lordship, "is linked, it is true, to a mighty empire; and the glories of its history, the visible signs of its present power, and the civilisation of its people, are calculated to raise and gratify his national pride. But he feels also, that his link to that empire is one of remote dependence; he catches but passing and inadequate glimpses of its power and prosperity; he knows that in its government, *he and his countrymen have no voice*,—while his neighbour on the other side of the frontier assumes importance, from the notion that his vote exercises some influence on the councils, and that he himself has some share in the onward progress of a mighty nation." We cannot help thinking, however, that his lordship's plan of raising up a more extended American nationality, though it might be some barrier against a disposition to coalesce with the States, would have a very imperfect and even doubtful effect in strengthening the ties with Britain. It would appear

that the best expedient is the one long ago proposed by the sagacious mind of Adam Smith, and which has never yet perhaps been duly considered; namely, the allowing them to send representatives to the imperial parliament. They would thereby be converted from subject appendages to integral portions of our vast empire. Their aspiring statesmen would have a field opened to their ambition, far superior to that of a convention of united colonies; and they would see this greatness inseparably connected with the maintenance of the union. They would come in contact here with public men, not, indeed, free from violent partisanship, yet imbued on the whole with more dignified, temperate, and statesmanlike views, than usually animate the members of a provincial legislature. They might also, upon their return, diffuse an improved political feeling among their countrymen.

There would no doubt be difficulties in the measure, and the union could not at first, perhaps, be made complete. The colonists, at present, would scarcely consent to intrust their local concerns, or yield the power of taxing them, to an assembly so remote, and in which their members would form so small a minority. For these purposes local parliaments might still seem to be necessary. But the arrangement, could it be effected, would prove an unalloyed privilege, and the objections both of feeling and interest, which have sometimes rendered such schemes unpopular, would be gradually obviated. At the commencement there would not be any occasion on their part to demand a very large number of representatives, which indeed would be in many respects inconvenient. Fifteen or sixteen might be deemed quite enough, and would not, in fact, when compared with the population, be much inferior to the proportion sent by Ireland. Nor would such an increase make any material addition to the members who already crowd the House of Commons. Owing to the paucity of independent fortunes in the colonies it would probably be necessary to pay the deputies; and should there be any

difficulty in finding a sufficient number of natives to undertake the office, there would be no want of British statesmen ready to become candidates for the honour of supplying their place.*

It would not be proper to close this chapter without giving some view of the late important transactions relative to the boundaries of British America. In our introductory notices† we stated the outlines of the question now pending, and observed that, though of little immediate importance, the rapid progress of colonization would soon enhance its interest, and might render it a ground of serious dissension. We scarcely expected that in the brief interval during which this work was passing through the press, our prediction would be so amply fulfilled. The ambitious spirit which animates the people of Maine, joined to the project of a British railway from St Andrews to Quebec passing through the territory, has given to the discussion a profound political character, augmented in no small degree by the turbulent impatience of the local authorities.

From the extensive papers on this subject laid before Parliament, it appears that the British Government, as soon as the award was pronounced by the King of Holland, intimated their acceptance, though we were thereby deprived of all the territory south of the St John, and allowed little more than a third of the country originally claimed. But notwithstanding this accession on the part of the English cabinet, Mr Preble, American ambassador at the Hague, protested against the decision, alleging that his majesty had acted not as an arbiter but a mediator, and instead of deciding between the two boundary lines, had suggested one differing from either. He immediately went home; and, after visiting Maine, proceeded to Washington in order to support his opinion; but there

* Mr Haliburton, Bubbles of Canada (8vo, London, 1839, pp. 322, 323), treats this project with hostility and even derision, but does not state any reasons, without which we must decline yielding to his authority, though respectable. He admits that it is a favourite idea with the aspiring young men in the colony.

† Vol. i. p. 40-43.

he found a strong indisposition to allow the subject to involve the States in a dispute with Great Britain. It was represented that Maine had secured the most extensive and fruitful part of the territory, and that if she attempted to support her claim by arms she was likely to suffer much more than the whole was worth. To save, however, at once her honour and interest, it was suggested that in room of the ceded tract, a grant might be made of a million of acres in the western country, and the proceeds of them, when sold, placed in her treasury. The representatives of the state strongly asserted their claim ; but nevertheless, on considering all circumstances, they expressed their willingness to enter upon an amicable negotiation on that basis.*

While every thing was thus in a friendly train of adjustment, the senate of the United States, by an injudicious vote, rejected the award, and directed the government to re-open the discussion on the simple basis of the treaty of 1783.†

The executive are understood to have been a good deal chagrined by this decision ; and Mr Livingston, the foreign secretary, in addressing Mr Bankhead, our ambassador, did not conceal that it had been contrary to his and the President's opinion. No choice, however, was left to them but to resume the negotiation, which he promised should be conducted with the sincerest desire to bring the question to a speedy and satisfactory conclusion. Even if they could not agree as to the original line, it was hinted that another might be found more convenient to both parties than that designated by the arbiter. Lord Palmerston in reply expressed his great surprise and regret at this decision, but stated that if Mr Livingston's plan were submitted to him, and an assurance given that due powers had been procured from the state of Maine, he would be ready to enter into the negotiation in the most friendly spirit.‡ The American secre-

* North American Boundary Correspondence, A, p. 1-6; B, p. 173-180.

† Ibid. A, p. 11.

‡ Ibid. A, p. 13-17.

tary proposed that a new commission should be formed, consisting of an equal number of each nation, with an umpire named by a friendly power. These were to investigate the ground anew, and endeavour to find a boundary really corresponding to the treaty of 1783. This, considering that the laborious efforts of a former commission had proved abortive, he admitted to be difficult. He thought, however, better hopes might be entertained if, instead of proceeding due north according to the strict terms, they should diverge more or less westward, and in that direction seek the highlands described in the official deed. The British negotiators replied that their government could not, without extreme reluctance, agree to a new commission after the unsatisfactory result of the former. The failure appeared evidently to have arisen from the treaty being conceived in ignorance of the real features of the country, to which consequently it was wholly inapplicable; and this opinion, confirmed by the arbiter, precluded the hope that the most diligent search would ever find a boundary which did not exist. They therefore expressed an earnest wish that the senate would consent to revoke its decision, or that some conventional line suited to both parties might be proposed. Mr M'Lane, however, now American secretary, intimated that this last course was impossible until after an attempt had been fairly made upon Mr Livingston's new principle, and till the consent of Maine should be obtained. Lord Palmerston, on finding matters in this state, intimated that he would no longer object to a commission, provided certain preliminary points were understood, of which the principal was that the tributaries of the St John were not to be considered as streams falling into the Atlantic; consequently there could be no room for any search northward of that river.* Although, according to our view, this principle was quite sound, it could not be acceptable to the other party, since any line south of the St John

* North American Boundary Correspondence, A, pp. 23-29, 36-39, &c.

was necessarily less advantageous to them than the one which they had declined. They demanded, therefore, that this point with the others should be left to the decision of the proposed commissioners.*

The affair had thus come to a very hopeless point, and more than a year was consumed in discussions without any advance being made; though there was still on both sides the profession of an eager desire to adjust it amicably. Lord Palmerston, in October 1835, proposed that they should proceed upon the impartial principle of making an equal partition of the disputed country. Yet, however fair this proposal might appear in the abstract, it could scarcely be acceded to by the Americans, as being more unfavourable to them than the one which they had rejected, and taking from them territory which the British had already agreed to cede. On the other side they had the assurance to propose that the St John from its source to its mouth should be made the boundary. Had this suggestion been adopted, they would, upon waving their claim to a barren mountainous tract, have gained the province of Charlotte, one of the finest in New Brunswick, densely peopled with British settlers. Our foreign secretary, in peremptorily rejecting the proposition, could not help expressing his wonder that it should ever have been made.†

Amidst such fruitless negotiation seven years were spent without a single step being made in advance; and during this period the state of Maine, which found itself checked in its plans of colonization, showed the most violent marks of impatience. In 1831, an act was passed by its local rulers incorporating the township of Madawaska, which is situated not only in the disputed territory, but in that part of it awarded by the umpire to Britain. This was followed up by an order from a justice of peace in Penobscot, that the inhabitants of that place should assemble and elect municipal officers and representatives. The mandate was seconded by

* North American Boundary Correspondence, A, pp. 47, 82, 83.
† Ibid. pp. 88, 92-96.

agents, who went privately among the people, assuring them that as they were now American citizens, it was both their duty and interest to comply; and many of their number being French Acadians, and extremely ignorant, were easily induced to yield obedience. On learning these proceedings, Sir Archibald Campbell apprehended four individuals who had been more than usually active, and brought them to Fredericton, where they were condemned to pay fines of £50 each. The legislature loudly complained of this decided measure, and even ordered a body of militia to march towards the frontier, but at the same time agreed to await the decision of the general government, to which they appealed for redress. Mr Livingston, however, at once made known to both parties the determination of the executive not to sanction any such interference while the negotiation was pending. The Governor of Maine then stated in explanation, that the act sanctioned by him was meant to be quite general and prospective, and that the proceedings founded upon it were merely the unauthorized act of a few rash individuals. The American secretary, having transmitted this statement to the British ambassador, with assurances that such conduct should in future be prevented, solicited, with the view of allaying irritation, that the prisoners might be liberated. Sir Archibald Campbell, in a very conciliatory spirit, complied with his request, and the affair was, for the present at least, amicably composed.

In the course of 1833, discussions arose about the right of cutting timber on the Aroostook River by citizens of Maine and Massachusetts, and also about a road begun by those states, intended to reach to that river, and which in fact had already been carried beyond the disputed frontier. After mutual explanations and concessions, this affair was in like manner settled.*

In 1835 some collisions took place in that portion of

* North American Boundary Correspondence, B, pp. 9-12, 16, 19-22.

the contested land which borders on New Hampshire. On the banks of Indian Stream, one of the upper branches of the Connecticut, settlers from different quarters had located themselves, and even formed a kind of provisional constitution. The authorities of the state just mentioned, on receiving a charge against Enos Rowell, resident in this district, seized and lodged him in prison. On complaint being made to Mr Forsyth, then American secretary, he called for an explanation from the governor, who alleged that his people had long held peaceable possession of the land, and therefore considered themselves entitled to maintain their jurisdiction till the question should be determined. He stated, as a justification of his conduct, also, that Luther Parker, an occupier in the same territory, had been arrested and carried to Sherbrooke, under a warrant from a magistrate in Lower Canada. While these matters were under discussion, a more serious outrage occurred. Blanchard, a resident in the settlement, under authority from a sheriff in New Hampshire, arrested one of its inhabitants ; upon which Mr Rea, a magistrate in the district of St Francis, issued a warrant to apprehend Blanchard himself. This was duly executed ; but the constables employed were pursued by a considerable body of armed men into the British grounds, and even to Mr Rea's house, where the prisoner was rescued. The magistrate, while strongly remonstrating against this violence, was attacked, his officer wounded, himself carried off and held for some time in confinement. Voluminous affidavits were produced on both sides, in which defence and recrimination were mingled ; in reference to which Mr Fox justly observed, that the territory along the line had become the asylum of vagabonds from either country, and no regular jurisdiction could, in the present unsettled state of the question, be exercised in it. Lord Palmerston closed the discussion by directing a general remonstrance to be made to the American Government on the unfortunate consequences which must follow a recurrence of such proceedings, and a declaration that his majesty's minis-

ters would feel it their duty, by all means, to protect his subjects from aggression.*

The people of Maine became more and more restless; and in 1837, the legislature having ordered a census of the state to be taken, Ebenezer Greely was instructed to take the numbers in Madawaska. He not only executed this commission, but used every means to induce the inhabitants to consider themselves subjects of the United States; assuring them that, out of the share of the surplus funds of the general government, about to be granted to Maine, each head of a family would be presented with three dollars. Sir John Harvey, now governor of New Brunswick, despatched a messenger, who, after vainly calling upon Greely to desist, made him prisoner and brought him to Fredericton; where he was kept indeed in very slight confinement, being even allowed, on account of his health, to walk about the town. The American cabinet made loud complaints upon this occurrence, pretending that the simple enumeration of the people could not be considered an act of jurisdiction, or contrary to the understanding between the two countries. The British negotiators strenuously maintained the contrary; but after a detention of about two months, the period of the commission having expired, Greely was set at liberty. Shortly afterwards he returned with the intention, formally announced in a letter to the governor, of completing his survey; upon which the solicitor-general went to the spot, and in vain warned him to desist, on penalty of being taken into custody, for which he declared himself fully prepared. The same gentleman then proposed that he should return, and state that he had been forcibly interrupted, tendering a certificate to that effect; but the other refused to desist on any footing except that of being again placed in confinement. The wonted discussions were again renewed; and Maine even threatened, according to a preconceived design, to send another agent, supported by an armed

* North American Boundary Correspondence, B, pp. 85, 93, &c. 118, 142.

force, which must have produced a warlike collision. Fortunately, Mr Forsyth, the American secretary, by a vigorous interposition of official power, averted this violent measure; and after the lapse of a little time, the ferment having subsided, the governor solicited the release of Greely, with which, on an understanding that no further steps were to be taken, Sir John Harvey thought it expedient to comply.*

About this time, a remonstrance was made on the subject of the railway projected between St Andrews in New Brunswick and Quebec, the proposed line of which passed in part through the disputed grounds. The British Government had encouraged this undertaking, and even subscribed £10,000 towards its execution; but on a complaint being laid before Lord Palmerston, he at once, in the most conciliatory manner, agreed to suspend this important work till the settlement of the boundary question.†

In March 1838 the representatives of Maine, on the report of a committee, passed resolutions expressing their determination to rest satisfied with nothing short of the entire demands made by their country. They rejected the proposal either of the award or of a conventional line, and insisted upon a new survey, which they were persuaded would establish their right to the whole of the Disputed Territory. They further declared, that if the general government, which had already voted 20,000 dollars for the purpose, should not, by itself or in conjunction with Great Britain, set one on foot by the first of September, they alone would take this step.‡

This violent and restless disposition, during the slow progress of the negotiation, impelled the people of Maine to measures more determined, and which threatened to lead to a much more alarming collision than had occurred at any period of this long-protracted discussion.

The Aroostook has been already mentioned§ as a con-

* North American Boundary Correspondence, B, pp. 58-61, 65, 68, 82.

† Papers B, p. 49-51. ‡ Ibid. p. 189-192. § Vol. ii. p. 235.

siderable river, flowing through the Disputed Territory eastward to the St John, and having on its banks some extensive forests. The question as to the right of ownership did not, as was observed, prevent British lumberers from exercising upon it their rude vocation; and this class, nowhere very mild or orderly, being here released from the restraints of law, were little disposed to brook any check upon their operations. Whether these woodmen became more active in their proceedings, or whether the Americans displayed a greater degree of jealousy, there is no doubt that an extraordinary ferment was excited at Augusta in January 1839. The most regular course would have been, to remonstrate with Sir John Harvey, and propose some mutual arrangement for preventing the trespass, which was not alleged to be committed under his sanction; or, at most, to refer the grievance to the general government, to which the constitution intrusts all transactions with foreign powers. But despising such conciliatory views, the cry arose that Maine should herself proceed to action, and forcibly redress her own wrongs. Governor Fairfield, sharing this disposition, proposed to the Assembly that a land-agent should be sent with an adequate force to accomplish the object now stated, and on the 24th of the month a vote to this effect was readily passed.

The party thus employed, finding the lumberers unprepared for resistance, soon drove them beyond the frontier. Those daring spirits, however, following the bad example set to them by certain Americans, broke open a Government magazine, supplied themselves with arms, and returned to the scene of action. They had then no difficulty in repulsing the intruders, seizing the person of Mr M'Intyre, the agent, whom they carried to Fredericton. The indignation of the citizens of Maine was instantly raised to the highest pitch, and it was determined to send a considerable force into the debateable land. This resolution was forthwith executed; and the trespassers were either driven out or made prisoners; which last fate befell Mr Maclauchlan, warden of the dis-

trict, who, without any knowledge of the affair, was returning from a tour of inspection.

The British governor, on learning this transaction, felt himself called on to take a decisive part. He addressed a letter to Fairfield, referring to an agreement understood to have been made between the two governments, to the effect that as long as the claims to the territory in question were undecided, it should remain under the exclusive jurisdiction of England. He therefore demanded the immediate evacuation of the country thus forcibly occupied, and the liberation of Mr Maclauchlan and the others, that they might be tried by English law. He farther proposed, by placing a boom at the mouth of the Aroostook, to prevent future depredations; intimating, at the same time, that unless these requests were complied with, troops would advance to enforce them. Fairfield made an answer, not only breathing defiance, but denying in direct terms the existence of any such agreement as that referred to, and calling upon Sir John to state where or when it had been concluded. The truth is, this claim seems to have been made without due consideration, or probably without a full understanding of the instructions received from home; for no mention of this supposed compact occurs in the whole course of the correspondence. On the contrary, after the rejection of the award, Mr Livingston wrote:—"Until this matter shall be brought to a final conclusion, the necessity of refraining on both sides from any exercise of jurisdiction beyond the boundaries now actually possessed must be apparent."* To this Mr Vaughan, directed by the colonial secretary, replied:—"He is further to assure the secretary of state, that his majesty's government entirely concur with that of the United States, in the principle of continuing to abstain, during the progress of the negotiation, from extending the exercise of jurisdiction within the Disputed Territory beyond the limits within which it has been exer-

* Boundary Correspondence, A, p. 14.

cised by the authorities of either party."* It is somewhat surprising that the American negotiators, while boasting of their careful research into the documents, never lighted upon this passage so decisive in their favour. They dwell merely on the absence of any positive agreement, and on the repeated remonstrances made by them respecting English acts of jurisdiction.

At Washington, an extraordinary sensation was excited by the report of these proceedings. The President sent a message to Congress, describing the occurrences, justifying the conduct of Maine, and strenuously denying the claim of exclusive jurisdiction; at the same time recommending that, by some pacific arrangement, all strong measures should be averted till the British cabinet should have an opportunity of stating its sentiments. The reports made by committees of both houses concurred in the same views. That of the representative body hinted that Maine would have acted more properly in referring the whole affair to the general government, yet admitted that the pretensions of the English would equally have precluded negotiation with either party. Congress being about to rise, authority was given to the president to place the country in a state of defence, levying if necessary 50,000 volunteers. He was also empowered to send a special mission to London, with the view of bringing matters to a speedy adjustment.

A correspondence, at the same time, was opened between Mr Fox the British ambassador, and Mr Forsyth the American secretary. The former, supporting Sir John Harvey's claim, referred, as a thing well known, to the agreement respecting the exclusive jurisdiction; and the other party, denouncing this as a "grave error," called upon him to produce evidence in support of it. Mr Fox, evading any direct reply, lamented that the two governments should be found thus at variance, and promised to communicate Mr Forsyth's views to the ministry at home. After some discussion, however, the

* Boundary Correspondence, A, p. 22.

two negotiators agreed in signing a joint memorandum, according to which Maine should withdraw her armed force, and some mutual arrangement be made for the prevention of trespass. General Scott, meanwhile, was despatched to the frontier to take the command of the troops, and to exert his utmost diligence in preventing warlike collision.

This treaty was not very acceptable in Maine, where 800,000 dollars had been voted, and 10,000 militia ordered out, to support her claims. Sir John Harvey, however, had not proceeded to action, having merely stationed a force to prevent the Americans from advancing. General Scott, on his arrival, proposed that mutual declarations should be signed by the governors of New Brunswick and Maine; the former binding himself that he would not, for the present, attempt to take military possession of the territory; the latter that he would withdraw the troops recently marched into it. Both parties, in the mean time, were to hold the portions of which they were in actual possession, but merely with a civil force sufficient to exclude trespassers. These terms were accepted, first by Sir John Harvey, and then by Governor Fairfield, who immediately disbanded the newly levied militia, and sent orders to those who had entered the district to withdraw. Thus the threatened collision was averted, and the affair left to be settled by the federal government and the British ministry.

Considering the disposition of both these parties, there seems little doubt of an ultimate arrangement on a pacific basis, though it may not be achieved without some difficulty. In the event of any fresh survey, the discrepancy of opinion respecting the rivers falling into the St John must, it is evident, preclude any result in which both can acquiesce. There seems no chance then of an amicable settlement, except by submitting the whole question to another arbitration. In that case, Britain would be fully entitled to demand that the new award shall be accepted, on whatever grounds it may be given, and that no attention shall be paid to any objec-

tion on the part of the people of Maine, who at present will listen to no decision which does not put them into possession of the whole territory.

A considerable time must, however, elapse ere these arrangements can be completed, during which increasing inconvenience and irritation may be felt from the district being left waste, and all improvement prevented. We cannot, therefore, help suggesting, whether some agreement might not be entered into, by which each party, in the mean while, should exercise full jurisdiction over the portion assigned to it by the award of the Dutch king. The evils just stated would be thereby remedied; and even were the negotiation to be indefinitely prolonged, this compact might, by prescriptive use, gradually become permanent.

ZOOLOGY.

CHAPTER V.

Notices regarding the principal Zoological Productions of British America.

The Quadrupeds—The Birds—The Reptiles—The Fishes—The Insects.

In a former volume of our series, closely connected both in subject and locality with our present disquisition, we entered at considerable length into the Natural History of the northern regions of the new world.* A large proportion of the zoological productions of British America are there described; for, as nature draws no sudden lines of demarcation between the animal inhabitants of two contiguous regions, so, in describing, as we have already done, the zoology of those vast territories which lie to the northward of the forty-eighth parallel, from the northern portion of Lake Superior to Melville Island, and from Newfoundland and the Eastern Cape of Labrador, westward to the peninsula of Alaska, we unavoidably included many important features of the natural history of both the Canadas. Our political divisions of states and empires do indeed so seldom accord with the true and more characteristic divisions of the physical geography of nature, that we cannot correctly view the distribution of animal life with any reference to our artificial boundaries, because the latter bear no necessary relation either to the influence of climate or the development of organized beings. Thus Illiger, in

* See Progress of Discovery on the more Northern Coasts of America, with Descriptive Sketches of the Natural History of the North American Regions.—Edinburgh Cabinet Library, No. IX.

his well-known essay on the geography of birds, has erred in viewing those creatures according to their distribution among the five great divisions of the world,—because, as Humboldt has remarked, all these continents, with the exception of Europe, being extended from the temperate to the equatorial zone, the laws of nature cannot manifest themselves when we group the phenomena according to divisions which are arbitrary, and depend simply upon the difference of meridians.

Our present observations, then, must be taken in connexion with and as supplementary to our more extended sketches of the North American zoology contained in the volume just referred to; for we deem it worse than useless to repeat the history and description of animals,—inhabitants of Canada and other southern portions of British America,—which we have already characterized as natives of the adjoining though more northern regions. We commence as usual with the class of quadrupeds, which may be said to assume additional importance in countries where fur-bearing animals are justly regarded as among the most valuable productions of nature, and where vast tracts of territory are unfit for the ordinary purposes either of pastoral or agricultural occupation.

None of the monkey tribe inhabit any part of British America. Indeed, we believe, they do not advance farther north than Mexico; the increasing coldness of the climate preventing their migration even into the warmer parts of the United States.*

The bats, shrews, and shrew moles, have been noticed in our former volume. It is certain that several true

* Although in Europe we have apes on the rock of Gibraltar (36th parallel) no quadrumanous animal has been observed in the new world to the north of the 29th degree. The most northern species are the howling monkeys (genus *Mycetes*), and those belonging to the genus *Hapale*. Both these genera, according to Lichtenstein, are represented in North America by species which occur in the warm tracts by the seashore, as well as in some of the interior valleys of Mexico.—See Abhandl. der Akademie der Wissenschaften zu Berlin, 1827.

moles inhabit America; but whether, as Dr Harlan and others suppose, any of them is identical with the common mole of Europe, has not yet been satisfactorily determined. Some specimens in the museum of the Zoological Society of London differ from our species in being of smaller size, with a thicker and shorter snout. They were brought from America, but from what precise locality is yet unknown. That singular subterranean animal the long-tailed star-nose (*Condylura longi-caudata*), is believed to inhabit the borders of Lake Superior; and the radiated mole of Pennant (*C. cristata*, Desm.), is found in Canada and the United States.

There are probably three or four different kinds of bears in North America; but neither the grizzly bear, the barren-ground bear, nor the great polar species, infest the countries with which we are more immediately occupied, although the last named occasionally travels as far southwards on the coast of Labrador as the fifty-fifth parallel. However, the black bear (*Ursus niger Americanus*) is well known in Canada, and is found wherever wooded districts occur, northwards to the shores of the Arctic Sea, southwards as far as Carolina, and westwards across the continent to the shores of the Pacific Ocean. Although this species is the least carnivorous of its kind, yet Dr Richardson informs us that its strength and agility, combined with its great tenacity of life, render an attack upon it very hazardous, and its pursuit has always been considered by the rude inhabitants of the northern regions as a matter of the highest importance. They previously propitiate the whole race of bears by sundry ceremonies, and when an individual is slain they treat it with the utmost respect, address it as a near relation, and offer it a pipe to smoke. This veneration has no doubt arisen from their admiration of the skill and pertinacity with which Bruin defends himself, and it is both curious and interesting to observe how the same feeling is exhibited by various tribes of people, speaking different languages, and inhabiting separate countries.* We know from

* Fauna Boreali-Americana, part i. p. 17.

Regnard that the chase of the bear is regarded by the Laplanders as among the most solemn actions of their life; and Leems tells us that they never address that animal familiarly by its proper name of *Guourhja*, but call it "the old man in the fur cloak," because it has the strength of ten men and the sense of twelve. Bear-dances, in which its movements are imitated, are well known among the recreations of the North American Indians. Alexander Henry, who travelled in Canada and the adjoining territories in the years 1760-76, has furnished us with some valuable and curious remarks regarding the black bear of the new world. While on the banks of Lake Michigan, in the month of January, he observed the trunk of an enormous pine tree much torn, as if by the claws of one ascending and descending. He next noticed a large opening in the upper portion, near which the smaller branches were broken off. It was agreed that all his retainers should assemble together next morning, to assist in cutting down the tree, as from the absence of tracks upon the surrounding snow, it was presumed that a bear had for some time lain concealed within. The tree measured eighteen feet in circumference. Their axes being very light they toiled all day, both men and women, like beavers, till the sun went down, by which time they had got only about half way through the trunk. They renewed the attack next morning, and about two in the afternoon the monarch of the wood reeled and fell. For several minutes after the first crash every thing remained quiescent, and it was feared their labour had been spent in vain; but just as Mr Henry advanced towards the opening, out came an enormous bear, which he immediately shot. No sooner was the monster dead than his assistants approached, and all took the head in their hands, stroking and kissing it repeatedly, begging its pardon a thousand times, calling it their relation and grandmother, and requesting it to lay no blame on them, since it was truly an Englishman who had put it to death. "If," adds Mr Henry, "it was I that killed their grandmother, they

were not themselves behindhand in what remained to be performed." The skin was taken off, and the fat found to be in several places six inches deep. When divided into two parts it formed a load for two persons, and the fleshy portions were as much as four men could carry. In all, the carcass must have exceeded 500 pounds weight. As soon as they reached the lodge the head was adorned with various trinkets, and laid upon a scaffold, with a large quantity of tobacco near the nose; and sundry other ceremonies were gone through in the course of the ensuing morning, after which they made a feast of the flesh. According to this author it is only the female bear that makes her lodging in the upper parts of trees,—an instinctive practice by which her future young are secured from the attacks of wolves and other carnivorous animals. She brings forth in the winter season, and remains in her lodge till the cubs have acquired some strength. The male is said always to lodge in the ground, under the roots of trees.*

In the latitude of 65° the winter sleep of the bear continues from the beginning of October to the first or second week of May; but on the northern shore of Lake Huron the period is shorter by two or three months. In very severe winters, numbers of them have been observed entering the United States from the northward, all extremely lean, and accompanied by scarcely any females.† Now it is well known that bears never retire to their winter dens until they have acquired a thick coating of fat, and that in remote districts they couple in September, when in good condition from feeding on the wild berries, which are at that time mature and abundant. The females then retire at once to their holes, concealing themselves so carefully that even "the lyncean eye of an Indian hunter very rarely detects them;" but the males, exhausted by the pursuit of their mates, require ten or twelve days to recover their lost

* Henry's Travels and Adventures in Canada and the Indian Territories, p. 142.

† Pennant's Arctic Zoology, vol. i. p. 60.

fat. "An unusually early winter will, it is evident, operate most severely on the males, by preventing them from fattening a second time; hence their migrations at such times to more southerly districts."* It is an error, however, to suppose, as many do, that the black bears generally abandon the northern districts on the approach of winter, the quantity of skins, as Dr Richardson observes, which are procured during that season in all parts of the fur countries, being a sufficient proof to the contrary. The females bring forth about the beginning of January, and are supposed to carry for about fifteen or sixteen weeks. The number of cubs varies from one to five according to the age of the mother, who begins to bear long before she has attained her full dimensions.†

The next animal we have to notice is the common racoon of North America (*Procyon lotor*), a fox-like creature, with the gait of a bear. In a state of nature it sleeps throughout the day, and prowls about during the night in search of fruits, roots, small birds, eggs, and insects. It also frequents the seashore when the tide has ebbed, for the purpose of preying on crustacea and shell-fish. Although, according to M. Desmarest, it extends as far southwards as Paraguay, it must not be confounded with another species, the crab-eating racoon, properly so called (*P. cancrivorus*), which is more truly characteristic of the southern portions of the New World. The common racoon occurs as far north as Red River, in lat. 50°. Its fur is used in the manufacture of hats. This well-known animal is often seen in this country in collections of wild beasts. Linnæus bestowed upon it its specific name of *lotor*, from its frequent habit of dipping its food in water.

The existence of badgers in America seems to have been a *questio vexata* among several of the naturalists of last century. Buffon at first doubted their occurrence in that continent, and the New York animal described by M. Brisson under the title of *Meles alba*, has since

* Fauna Boreali-Americana, part i. p. 17. † Ibid.

proved to be merely a white variety of the racoon ; but the former naturalist afterwards described a true badger, said to have been received from Labrador, under the erroneous name of *carcajou*. Now the true carcajou is the wolverene (*Gulo luscus*). It has since, however, been satisfactorily ascertained, that a species of badger, distinct from the European kind, is extensively distributed in North America. Its existence in Labrador, as presumed by the great French naturalist, is still doubtful, but it is known to inhabit the prairies which skirt the rocky mountains, and the vast plains of the Missouri, although its southern range has not been well defined. It is frequent further north, in the neighbourhood of Carlton House, on the banks of the Saskatchawan, as well as on those of the Red River which flows into Lake Winnipeg. These districts, in fact, are so perforated by innumerable badger holes as to prove a serious annoyance to horsemen, especially after a fall of snow. These excavations are only in part dug by the animals themselves, the majority being merely enlargements of the burrows of marmots, which they not only dispossess but devour. The American badger is of a mottled or hoary gray colour above, and whitish on the under surface. Its fur is very soft and fine. It is fully more carnivorous than the European species, and, at least in the more northern districts, passes the winter in a torpid state. We include this animal in our present enumeration, because M. Desmarest informs us that "il en est venu en France, qui avaient été pris au Canada."*

The true carcajou or wolverene is well known in that country, and is spread over the whole of the northern portions of America, from the coast of Labrador to the Pacific Ocean. It is generally supposed to be synonymous with the *glutton* of the north of Europe, called *rossomak* by the Russians, of which the history, as handed down to us by Buffon, and copied by most ensuing writers, is nearly as imaginary as was that of the sloth prior to Mr Waterton's observations. But whether

* Mammalogie, p. 174.

Baron Cuvier is correct in his belief of this identity or otherwise, the wolverene of America is described by Dr Richardson as a carnivorous animal, which feeds chiefly upon the carcasses of beasts that have been killed by accident. It possesses great strength, and frequently annoys the hunters by destroying their hoards of provisions, and demolishing their martin-traps. It is sly and suspicious, and will rarely enter a snare, but rather pulling it cautiously to pieces from behind, it scatters the logs of which it is composed, and then carries off the bait. It also preys on meadow-mice and marmots, and occasionally on such quadrupeds of a larger size as have been disabled. The wolverene is supposed to do more damage to the small fur trade than all other vermin put together. It will follow a martin-hunter's path round a line of traps extending from forty to sixty miles, and render the whole useless by eating off the partridge-heads or other baits. Though not fond of the martins themselves, they never fail, as it were from sheer spite and mischief, to tear them in pieces, and bury them beneath the snow. Foxes are often seen to follow the wolverene that they may benefit by his wastefulness. Next to the polar bear this animal is one of the most northern of all known quadrupeds,—its bones having been picked up on Melville Island, nearly in latitude 75°. We are not well acquainted with its southern range, but Dr Harlan describes it as an inhabitant of Canada, and of the uncultivated parts of the United States, where its depredations are often experienced by the Indians.*

The preceding species, that is, the bears, racoons, and gluttons, belong to the tribe of carnivorous quadrupeds called *Plantigrades*, so named because in walking they place the entire sole of the foot upon the ground. But we now enter upon the *Digitigrades*, which also derive their title from their peculiar mode of locomotion. The heel does not touch the ground, and the act of walking is performed as it were upon the toes. The whole race of dogs, cats, and martins, may be named as familiar ex-

* Fauna Boreali-Americana, p. 60.

amples. Like most of our attempts, however, at a general arrangement, founded upon a single attribute, we find the principle somewhat imperfect in its application, or at least admitting of exceptions in relation to the character prescribed, in so far as several species might be adduced which truly agree with their digitigrade congeners in their prevailing features, but approach the plantigrades in their mode of locomotion.

The genuine digitigrades, however, are among the most active of their tribe; and as agility is an almost indispensable adjunct in the habits of a truly carnivorous creature, we find that these light-footed kinds are at the same time the most exclusively flesh-eating of all the ferine order.* The first subdivision of the tribe corresponds to the old genus *Mustela* of Linnæus, and includes all those small, insidious, slender-bodied animals which in Britain are usually named *vermin*, such as weasels, polecats, and others,—the *verminium genus* of Ray. They are extremely bloodthirsty and destructive in proportion to their size, and destroy great quantities of game in woods and fields and moorish mountains,—committing also cruel ravages in poultry-yards and other domestic enclosures, especially of our remoter country dwellings.

The occurrence of our common weasel (*Mustela vulgaris*) in North America, has been, like that of the badger, a disputed point. Although it is described by Dr Harlan as "abounding in the Atlantic states," it is omitted by Dr Godman in his American Natural History, and the Prince of Musignano regards the so-called common weasel of the United States as merely the ermine in its brown or summer coat. Both species, however, are described by Dr Richardson as indubitable inhabitants of the New World. Weasels, agreeing in all respects with those of Europe, have been killed by Captain Bayfield on the borders of Lake Superior. They become as white as ermines during winter in the fur countries. The last-named animals, which we call stoats (*M. erminea*), are well known in British America, occur-

* Encyclopædia Britannica, 7th ed. vol. xiv. p. 108.

ring from the most northern limits of the continent to the central districts of the United States. Although with us a shy and furtive creature, and seldom approaching nearer to human dwellings than to poultry-sheds and pigeon-houses, yet forced, we may suppose, by the greater rigour of the climate, it often domesticates itself in the habitations of the fur traders, and may be heard the livelong night pursuing the white-footed mouse (*Mus leucopus*).* The lamented Captain Lyon has described to us the manners of a captive ermine: "He was a fierce little fellow, and the instant he obtained daylight in his new dwelling, he flew at the bars and shook them with the greatest fury, uttering a very shrill passionate cry, and emitting the strong musky smell which I formerly noticed. No threats or teasing could induce him to retire to the sleeping-place, and whenever he did so of his own accord, the slightest rubbing on the bars was sufficient to bring him out to the attack of his tormentors. He soon took food from the hand, but not until he had first used every exertion to reach and bite the fingers which conveyed it."†

The vison, or American minx, is another species of this genus (*M. vison*), well known in Canada and the northern and middle states. It greatly resembles the *Mustela lutreola* of Pallas, an animal remarkable for its amphibious habits, and very common in Finland and other parts of the north and east of Europe from the Icy to the Black Sea, but not, as Erxleben erroneously supposed, a native of the New World. The American animal is the minx-otter of Pennant. Both species prey much on fish, reptiles, and aquatic insects, and the latter is easily tamed. "One," says Dr Richardson, "which I saw in the possession of a Canadian woman, passed the day in her pocket, looking out occasionally, when its attention was roused by any unusual noise." The fur of the vison, though fine and short, is not at present held

* Fauna Boreali-Americana, p. 46.
† Private Journal, p. 107.

in much esteem. This species ranges almost as far north as the 70th degree.

Of the martins properly so called, the pine-martin (*Mustela martes*, Linn.), distinguished by the dingy yellow colour of its breast and throat, is extensively distributed over North America, and occurs as far south as New England. It has been observed particularly to abound where trees have been left standing after being scorched by fire. Its fur is fine, and has long formed an important article of commerce, upwards of a hundred thousand skins being collected annually in the districts devoted to the trade. It is well known that it also formed a lucrative subject of export from Scotland before the Union. Dr Fleming says it builds its nest on the tops of trees; but, according to Dr Richardson, its habits, at least in America, are rather subterranean; and we have ourselves seen it winding its worm-like way amid the treeless *corries* of the Highland mountains, where not even a sapling wild-ash waved its slender leaves in those gray solitudes. Indeed both the pine and common martin of Scotland are often found in districts "rocky, bare, sublime," of which the most hopeless attribute is that of forest scenery.* Dr Harlan, however, describes it as preferring the thickest forests, climbing trees in search of birds and their eggs, attacking small quadrupeds, and bringing forth in the nest of a squirrel or in holes of trees.

The pekan or fisher (*Mustela Canadensis*, Linn.) is another well-known North American animal, which inhabits about thirty degrees of latitude from Pennsylvania to Great Slave Lake, and is believed to extend across the entire continent. Its habits resemble those of the pine-martin, but though it is nearly twice the size, its fur, being coarser, is less valuable. It haunts rather moister places, and in summer is said to prey much on frogs. It also not unfrequently attacks the Canada porcupine,—killing it by a bite in the belly. Some thousands of pekans are annually procured in the countries

* Encyclopædia Britannica, vol. xiv. p. 109.

adjoining Hudson's Bay, where, however, the species is less abundant than the pine-martin. Dr Richardson observes, that its physiognomy is very different from that of the latter animal, the features of which, when it is threatened, resemble those of an angry cat; but the expression of the pekan is nearer that of a dog, although the apparent obliquity of the eyes gives it a much more sinister aspect.

The genus *Mephitis* of Cuvier contains those peculiar animals commonly called *skunks*, or mephitic weasels, remarkable among all stinking things for their intense and uneradicable odour. Although several species are described in a general way, it does not seem very certain that more than one is known to naturalists,—the skunk weasel of Pennant (*Mephitis Americana*, Rich., *Viverra putorius*, Gmel.), which is spread over a vast extent of territory in the New World, where it varies greatly in different localities. Its size is that of a domestic cat; its fur, though rather coarse, is very ample, of a black colour, marked by longitudinal bands of white; and the tail, which is long and bushy, has generally two broad white stripes similarly extended upon a black ground. The skunk, as described by Dr Richardson, inhabits rocky and woody regions, spending the winter in a hole, and seldom stirring abroad during the colder seasons. It preys on mice, and in summer feeds much on frogs. Its gait is so slow that it can easily be overtaken by the hunter; and it makes no great efforts to escape by flight, seeming to trust for the discomfiture of its enemies to the sudden discharge of its noisome fluid. This secretion, which is of a deep yellow colour, is contained in a small bag placed at the root of the tail, and emits without doubt the most overpowering stench on the face of the earth. It is also so durable, that wherever a skunk has been killed, the place retains the taint for many days; and Mr Graham mentions the fact of several Indians having lost their eyesight in consequence of inflammation produced by this fluid having been thrown into them by the animal, which possesses the power of ejecting it to

the distance of several feet. "I have known," adds Dr Richardson, "a dead skunk thrown over the stockades of a trading post produce instant nausea in several women in a house with closed doors upwards of a hundred yards distant. The odour has some resemblance to that of garlic, although much more disagreeable. One may however soon become familiarized with it; for, notwithstanding the disgust it produces at first, I have managed to skin a couple of recent specimens by recurring to the task at intervals. When care is taken not to soil the carcass with any of the strong-smelling fluid, the meat is considered by the natives to be excellent food. It breeds once a-year, and has from six to ten young at a time."* Not fewer than fifteen varieties of this animal have been described, and many of them as distinct species under separate names. It is somewhat remarkable that the Hudson's Bay variety should approach most nearly to the description of the *Chinche* of Buffon (*Viverra mephitis*, Gmelin), which though said to be an inhabitant of Chili, is yet regarded by some observers as identical with the skunk of more northern regions; and to the same or a closely related species may also be referred the so-called glutton of Quito (*Gulo Quitensis*) described by Humboldt.† The variety which inhabits Canada is characterized by a white dorsal line in addition to two lateral ones. Old Sagard Theodat, one of the earliest historians of that province, observes regarding it,—"Cet animal, outre qu'il est de fort mauvaise odeur, est très malicieux, et d'un laid regard."

The Canada otter (*Lutra Canadensis*, Sabine‡) bears a great resemblance to the European species both in food and habits; but it is a much larger and more powerful animal, with a shorter tail, and is distinguished by the fur being equally dark and lustrous on the abdomen as the back. It is found across the whole of the upper territories of North America, haunting the neigh-

* Fauna Boreali-Americana.
† Recueil d'Observations sur la Zoologie.
‡ Zoological App. to Franklin's Journey to the Polar Sea, p. 453.

bourhood of falls and rapids during winter for the sake of unfrozen water, and travelling a long way from one district to another in search of these open spots. If pursued by the hunters during such peregrinations, it will throw itself forward on its belly, and slide through the snow for several yards, leaving behind it a deep furrow, and repeating this peculiar movement with such rapidity that the swiftest runner on snow-shoes with difficulty overtakes it. It also doubles on its track very cunningly, dives occasionally beneath the snow, and finally, when too hard beset to render flight availing, turns upon its ruthless pursuers, and defends itself with courageous obstinacy. It was this animal which during the spring season so frequently robbed the nets of Sir John Franklin's party, usually carrying off the heads of the fish, and leaving the bodies sticking in the meshes. Our own British species exhibits an analogous instinct, and is extremely injurious to fresh water fisheries, from its habit of preying very exclusively on the upper parts only of trout and salmon, leaving a large portion of the caudal extremity unconsumed. A curious question might be raised as to the ground of its objection to this despised portion of its booty. Seven or eight thousand skins of the Canadian otter are annually imported into England.* It may not be superfluous to remark, that the sea-otter of the New World seems confined to the western shores, from Alaska to California.

Naturalists are not agreed regarding the identity of the wolves of Europe and America, although the generality of writers have taken it for granted that the species found in the United States in no way differ from that of the European continent. However closely the "large brown wolf" described by Lewis and Clarke may resemble that of the ancient world, it is certain that the more northern American kinds differ greatly in their physiognomy from the natives of France and the Pyrenees. They are of a more robust and larger form, their

* Fauna Boreali-Americana, p. 50.

hair is longer, finer, and more woolly, their muzzle thicker and blunter, their head larger and rounder, with a sensible depression at the union of the nose and forehead. Except in their superior size and strength, these North American wolves so greatly resemble the sledge-dogs of the aborigines, that our Arctic travellers more than once mistook a band of them for the domestic troop of an Indian party. Captain Back indeed informs us that the offspring of the wolf and Indian dog are prolific, and are prized by the voyagers as beasts of burden, being stronger than ordinary dogs.* Dr Barton states, that the Indian dog is frequently called the "half-wolf breed" by the traders; and he mentions as a curious circumstance, that this animal will never attack or pursue the wolf,—a fact which he regards as strongly indicating the origin of the native breed. The American wolves generally burrow, and bring forth their young in *earths*, which have several outlets like those of the fox. When the deep and long-enduring snows of winter have covered the face of nature with their silent shroud, these creatures often suffer dreadfully from famine; and were they not fortunately as fearful as rapacious, they would assuredly prove most unpleasant neighbours. But, as we have noticed in our former volume on the more Northern Coasts of America, the simple expedient of tying an inflated bladder to a branch, so as to admit of its dangling in the air, is usually sufficient to keep a whole troop at a respectful distance. In the spring of 1826, a large gray wolf was driven by hunger to prowl among the huts which had been erected in the vicinity of Fort Franklin; but he molested no one, and being unsuccessful in obtaining food, he was found a few days afterwards, "all gaunt and grim," lying dead upon the snow. This individual is now preserved in the Edinburgh College Museum.

There are several kinds of foxes in the British dominions of North America, but none of them possesses the long-enduring speed of the European kind,—their

* Back's Narrative, Appendix, p. 492.

strength appearing to be exhausted at the first burst, after which they are easily overtaken by a mounted huntsman. The American cross-fox (*Canis decussatus*, Geoff.) is probably nothing more than a variety of the red fox of that country (*C. fulvus*, Desm.), though usually of smaller size. Its fur is highly esteemed, a single skin, not many years ago, being worth from four to five guineas, while that of the red fox did not bring more than fifteen shillings. The black or silver fox (*C. argentatus*, Desm.) is a much rarer and still more valuable variety, of which seldom more than four or five individuals are ever taken at any single post throughout the year. It varies from a mixed or hoary hue to a shining black, and La Hontan observes, that in his time the skin of one was worth its weight in gold. What that weight may be, we are not informed; but we know that it still brings six times the price of any other fur obtained in North America.

We cannot here enter into any detailed account of the domestic dogs of the New World. The most remarkable of the more northern kinds are the often-described Esquimaux dog, and a small species cultivated, so far as yet known, only by the Hare Indians. The latter bears the closest possible resemblance to a wild animal well known among the plains of the Missouri and Saskatchawan under the name of prairie-wolf. But the variety most generally bred by the native tribes of Canada and the Hudson's Bay territory may be described as intermediate in size between these two sorts, exhibiting in most of its characters strong evidence of a descent from a cross between the prairie-wolf and the larger gray species. "This breed," says Dr Richardson, "wants the strength of the Esquimaux dog, and does not possess the affectionate and playful disposition of the Hare Indian variety. It is used at certain seasons in the chase, and by some tribes as a beast of burthen or draught; but it has all the sneaking habits of the wolf, with less courage, and without the intelligence of that animal. It unites with its companions to assail a stran-

ger on his approach to the hut of its master; retreats on the least show of resistance, or endeavours to get behind him, and silently snaps at his legs. When opposed to another dog, it curls the upper lip very much, shows the whole of its teeth, and snarls for a long time, before it ventures to bite. A little Scotch terrier that accompanied us on the last expedition, disconcerted the largest of them by the smartness of his attack, and used to send an animal more than four times his own size howling away, although the density of its woolly covering prevented his short teeth from wounding the skin. When they fight among themselves, the dog that is vanquished is not unfrequently torn in pieces by the rest of the pack. They hunt the larger domestic animals in packs, snapping at their heels and harassing them until worn out, but scarcely ever venture to seize them by the throat. All the dogs of a camp assemble at night to howl in union, particularly when the moon shines bright."*

As regard to *feline* animals, we may observe, that there are no wild cats, strictly so called, in America, and that the domestic one is there an imported species; the so-called wild or mountain cats of the United States are lynxes. Of the larger animals of the genus (which are confined, however, chiefly to the southern countries), the most northerly is the puma or American lion (*Felis concolor*, Linn.), a fierce and destructive creature, which inhabits Paraguay, Brazil, and indeed as far northwards as Canada, into which it is said to have sometimes strayed. It can scarcely, we admit, be regarded as belonging to British America, and we name it here merely as serving to exhibit one of those links which connect together the zoology of the northern and southern quarters of the New World.

There is, however, a division of the feline group well known in the central and northern parts of America, viz. the *lynxes*, distinguished from the true cats by the length of their fur, the comparative shortness of their tails, and their tufted ears. Their skins are of consider-

* Fauna Boreali-Americana, i. 81.

able value in commerce. The lynx of the north of Europe (*Felis borealis*, Temm.) is of an ashy-gray, varying to brown and hoary, the fur being extremely full; and naturalists are now inclined to recur to the opinion of Pennant, that the Canada lynx (*F. Canadensis*, Geoff.) and that species are identical. According to Dr Richardson, the American breed are timid creatures, incapable of attacking any of the larger quadrupeds, but well fitted for the capture of the hare, on which, it is said, they chiefly prey. They make a poor fight when surprised by a hunter on a tree; for though they spit like cats, and set up their hair in anger, they are easily killed, even with a slender stick, by a blow across the back. They are excellent swimmers, and have been seen to cross the arm of a lake two miles in width. Their flesh is white and tender, though rather flavourless, and is used as food by the natives. From fifteen to twenty thousand skins of this species are procured annually by the Hudson's Bay Company. Several other lynxes inhabit North America, but do not, so far as we know, enter the countries to which our present work is restricted.

The amphibious family of the carnivorous order of quadrupeds, such as the seals and morses, are so imperfectly known even in Europe, that we can scarcely as yet look for any very accurate information regarding the American species. *Calocephalus lagurus* of F. Cuvier was transmitted from Newfoundland by M. de la Pilage, and the leonine seal (*Stemmatopus cristatus*) is known to descend much farther south on the Atlantic shore than elsewhere, one having been taken near New York. It is described as a distinct species by Fischer, under the name of *mitrata*. The gigantic walrus (*Trichechus rosmarus*) makes its way southwards along the coast of Labrador as far as the Magdalen Islands, in the 47th parallel.

The order which contains the pouched or marsupial quadrupeds is assuredly among the most remarkable in the zoological kingdom. They are distinguished by the

peculiar and premature production of their young, the majority of which are born in a state comparable only to that exhibited by the fœtal condition of other animals soon after conception. Thus the Virginian opossum, when first brought forth, does not weigh above a single grain, though its parent is as large as a full-grown cat; and the gigantic kangaroo of New Holland, which occasionally attains to the weight of nearly 200 pounds, produces a pair of young ones each about an inch long. Incapable of voluntary movement, destitute of distinct sensation, and with the external organs in a rudimentary condition, the feeble offspring becomes attached (in a manner and by means as yet but scarcely known) to the mammæ of the mother, and adheres to them continuously till such time as it has attained the ordinary capabilities of a new-born creature; and even long after that period, it continues to seek repose and refuge within its parent's lap, which for that purpose is providently furnished with an ample pouch, within which the nipples are contained. Two spiral bones attached to the pubis, and interposed between the muscles of the abdomen, support the pouch, and are found to occur at the same time, not only in the females of certain species, in which the bag is scarcely perceptible, but also in the males, in which it does not exist. In their geographical distribution, these singular quadrupeds seem confined entirely to Australia, North and South America, and one or two islands in the Eastern Seas. They are entirely unknown in Europe, Africa, and continental Asia. The genus *Didelphis* contains the most anciently known of the marsupial tribes, and is peculiar to America. The species are distinguished by the general name of *opossums*. They are nocturnal animals, resembling martins in their habits, though less active in their movements. Their intelligence is said to be very limited; a fact in curious conformity with the entire absence of all folds or convolutions of the brain, and according with the theory of M. Desmoulins, that the intellectual faculties are in the

direct ratio of the extent of the cerebral surfaces.* They dwell in woods, where they climb the branches of trees, feeding on birds, eggs, reptiles, insects, and fruits. They enter farmyards, and commit great damage by sucking the blood of poultry.

One of the best known of this genus is the Virginian opossum (*D. Virginiana*, Penn.), which is spread over a great extent of country from Paraguay to the great northern lakes, and abounds in the middle states. It lives in fields and woods, and often enters houses during the night, in search of domestic birds or other prey. It brings forth upwards of a dozen at a birth, which at first do not weigh above a grain each. They adhere to the teat instinctively, and continue attached to it till they are as large as mice and become covered with hair. The first or inner gestation lasts about six-and-twenty days, and the excluded young continue in the pouch nearly twice that term. Azara has seen them carried along by their mother, by means of their little tails, all twisted around that of their parent. Dr Harlan informs us that this species is sluggish in captivity, and by no means ferocious. It captures its prey by artifice rather than by chase; and the tail being prehensile, or possessed of the power of grasping, enables it to suspend itself from the branch of a tree, from whence it sometimes falls upon and seizes its unsuspecting prey. When discovered, it seldom attempts to escape; but its cunning in simulating death, with a view to avoid destruction, is proverbial. Though a flesh-eating animal, it is in a manner omnivorous, and is extremely fond of persimmons and apples. The flesh of the female is used as food, and when roasted bears no inconsiderable resemblance to the flavour of a young pig. The male emits rather a strong odour.†

* See Tiedeman's Icon. Cereb. et quer. Mammal. rar. tab. 5, fig. 9; and the article Cerebro-Spinal of the Diction. classique d'Hist. Nat. t. iii. p. 361.

† Fauna Boreali-Americana, p. 120.

We now enter the order *Glires*, or gnawers, of which the genera confine themselves chiefly to a vegetable diet, by which is meant not only leguminous plants, but grain, grasses, fruits, nuts, and other productions of the earth. They derive their name of gnawers from their mode of eating, which consists in the reduction of their food by a continuous action of the front teeth into very small particles, instead of tearing it like the carnivorous tribes, or grinding it by a lateral motion, as practised by the ruminating kinds. Among the *Rodentia*, or gnawers, the lower jaw is so articulated as to admit, in addition to the vertical movement, which necessarily obtains in all the higher animals, of a motion backwards and forwards, but not lateral; and in beautiful adaptation to this structure, the raised plates of the molar teeth are placed transversely, so as to act in more direct opposition to the confined horizontal movement of the jaw,—thus aiding the power of trituration. A few of the species (with more sharply tuberculated molars) are somewhat carnivorously inclined, and several of the murine kinds may be said to be nearly omnivorous. Of these, through the unintentional agency of man, many have become colonized in countries most remote from the places of their origin. The Rodentia are creatures of a timid disposition, and of habits for the most part nocturnal.

The majority of hybernating animals belong to this order.

The most remarkable species are the beavers,—genus *Castor*, Linn. Naturalists have not yet succeeded in establishing any distinctive characters between the gregarious beavers of North America and the few isolated pairs which still establish their less republican dwellings along the banks of a few great European rivers, such as the Rhone, the Rhine, and the Danube. The latter description have a somewhat paler fur, and are of rather smaller dimensions. The best history of the American beaver is that given by Hearne; which, however, we shall not here record, as we have already had occasion

to quote it in a former volume of our Cabinet Library.* We shall only add the curious particular, that when beavers intend to erect a new habitation, although they seldom begin building it till towards the latter end of August, like good carpenters they fell the wood early in summer. Dr Richardson informs us that the flesh of these animals is much prized by the Indians and Canadian voyagers, especially when roasted in the skin after the hair has been singed off. The enjoyment of this expensive luxury is of course restrained as much as possible by the fur traders. Beavers pair in February, carry their young about ten weeks, and bring forth from four to eight cubs by the middle or end of May. Pennant fixed the limit of their geographical distribution in a southerly direction about lat. 30°, not far from the Gulf of Mexico, while Mr Say, a more recent writer, assigns as their boundary in that direction the confluence of the Ohio and Mississippi, about seven degrees farther northwards.† In the higher latitudes their extension seems restricted by the absence or deficiency of wood,—the districts called the barren-grounds not yielding enough, even of willows, for their subsistence. But where other circumstances are suitable, they are in no way deterred by the intensity or long endurance of cold, many being known to occur as high as latitude 68°, on the banks of the Mackenzie, the largest and best wooded of all the American rivers that discharge themselves into the icy basin of the Polar Sea. The Iroquois are the greatest beaver-catchers in Canada. Great injury, however, has resulted from the indiscriminate capture of old and young, and the too frequent trenching of the same dams. It is known that in the year 1743 the amount of their skins brought into the ports of London and Rochelle exceeded 150,000, besides a considerable quan-

* Northern Coasts of America, p. 334-336.

† The late Mr Bartram is stated by Dr Harlan to have indicated (in his MS. notes) two species of beaver as inhabiting the United States; viz. the "great beaver of Canada," and the "lesser beaver of Florida and Carolina."

tity introduced illicitly into Great Britain; while in 1837 the importation into London, from more than four times the extent of fur country compared with that formerly possessed, did not much exceed 80,000.*

The musk-rat, or musquash of Canada, has been described in our former volume. The Indian hunters spear this kind through the walls of its mud house. It is the only one of its genus as yet distinctly known, and may be characterized as an animal of amphibious habits, measuring above a foot in length, with a thick flattish body, a short head, indistinct neck, thighs hid in the body, very short legs, and large hind feet. It extends over nearly forty degrees of latitude, from 30° to 69° north, and feeds chiefly on vegetables, though not averse to fresh-water muscles during the summer season. It is extremely prolific, sometimes bringing forth three broods in a single season, but is often checked in its numbers by a great mortality which ensues at uncertain intervals from some unknown cause. They also frequently devour each other, when reduced to famine by the freezing up of the swamps from which they are accustomed to derive "moist nutriment."

The *Arvicolæ* or meadow-mice are frequent in America, although some authors have assigned them exclusively to the ancient continent. We shall here mention only *A. Pennsylvanica* of Mr Ord, a species which greatly resembles our short-tailed field-mouse (*A. agrestis*), with which some regard it as identical. It is common in the United States, and extends northwards through Canada as far as Great Bear Lake. It multiplies with much rapidity in the neighbourhood of the trading posts, and seeks shelter in barns and outhouses, where it accumulates hoards of grain and seeds. It is also very fond of bulbous roots, and is injurious to river plantations, by making holes in the banks.

The lemmings (Genus *Georychus*, Illiger) scarcely differ from the preceding except in the shortness of their

* Encyc. Brit. xiv. 138; and Fauna Boreali-Americana, i. 108.

ears and tail, and in their larger and stronger claws, by which they are well fitted for digging under ground. These animals are rather characteristic of districts lying to the north of those with the natural history of which we are here engaged,—the Hudson's Bay species being indeed one of the most northerly of known quadrupeds. It does not appear to have been as yet met with in the interior parts of the country, but inhabits Labrador, Hudson's Straits, the coast from Churchill to the extremity of Melville Peninsula, and the desolate islands of the Polar Sea. Its natural habits are but imperfectly ascertained; but Hearne states, that it is so easily tamed, that, if captured even when full grown, it will in a day or two become so reconciled to captivity as voluntarily to creep into its master's bosom. It has no external ears, and scarcely any tail, and (a character by which it probably stands as yet distinguished from all other known animals) a pair of claws upon the middle fore-toe.*

The genus *Mus*, though still of great extent, is now restricted to the rats and mice properly so called, an omnivorous and troublesome race, which, though not indigenous to America, have pertinaciously followed man in his almost universal migrations, and have now colonized extensively throughout the Western World. Indeed, wherever European nations have won their way, these small but adventurous creatures have accompanied the merchant or the mariner; and from the forlorn settlements of the fur traders of America to the populous cities of the south of Asia, their sly and furtive habits have been the source of equal annoyance. We must therefore now view them in their character of cosmo-

* "Les deux doigts du milieu," says Baron Cuvier, "aux pieds de devant du mâle ont l'air d'avoir les ongles doubles parceque la peau du bout du doigt est calleuse, et fait une saillie sous la pointe de l'ongle—conformation qui ne s'est encore rencontrée que dans cet animal."—Règne Animal, i. 208. Dr Richardson, however, informs us that the lower layer of the claw appeared to him to be not an enlargement of the callus, but rather of the same substance as the superior portion or nail proper. See Fauna Boreali-Americana, i. 133.

polites, and as deserving under that character of a brief notice in the present work.

The common or brown rat of Britain (*Mus decumanus*) is usually regarded as an animal of eastern origin, a native of Persia and Hindostan, which made its appearance in the western countries of Europe only during the earlier half of last century. It is a bolder and more powerful species than its predecessor the black rat, which it is alleged, on no well-founded evidence that we know of, to have nearly extirpated. It was unknown even in the maritime towns of France prior to 1750, and according to Pallas was not observed in Russia or Siberia before the year 1766. About that period they were seen to advance in great bands towards the embouchure of the Wolga, and in the towns of Astracan and Jaitzkoi-Gorodok, appearing to come rather from the western desert, that is, from the European side. It is now well known in America, and is very common in Lower Canada. Dr Richardson, however, was informed so lately as 1825, that it had not then advanced much beyond Kingston in Upper Canada. Dr Harlan states, on the testimony of an eyewitness, that it had not presented itself in the United States any length of time previous to the year 1775.

The black rat (*Mus rattus*) is an animal of smaller dimensions than the preceding, with a less head and sharper muzzle. It is equally omnivorous, but not so productive. Its original country is still more doubtful. Ancient writers make no mention of it, and the prevailing belief is, that it made its way into Europe during the middle ages. Though now comparatively rare in Britain, it is still the prevailing species in several portions of the adjoining continent. Dr Harlan is inclined to believe that this species was indigenous to the United States, but he does not state the ground of that peculiar opinion. It was very numerous there between sixty and seventy years ago, but has become rare along the Atlantic coast since the arrival of the brown or Norway species. It is found, however, though by no means frequently, in the

Western States, having, like the native Indians, receded before its European invaders.* It has not been observed in any part of the more northern fur countries.

Our common domestic mouse (*Mus musculus*, Linn.), though originally an imported species, is now well known both in Canada and the United States. The long-tailed field-mouse (*M. sylvaticus*) of Europe seems represented in America by *Mus leucopus*, a prying nocturnal creature which does great mischief in gardens and maize plantations. It also dwells in human habitations, and is very generally mistaken for the British domestic mouse by our residents at Hudson's Bay.

The genus *Gerbillus* contains species peculiar to the warmer regions of the Old World. They may be described as long-footed rats, allied in many respects to the jerboas, with which indeed they have been frequently confounded. The genus *Meriones*, F. Cuv., was formed by separation from that just named, and contains species distinguished by the greater length of the hind legs, the nakedness of the tail, and the existence of a very small tooth in front of the molars of the upper jaw. These latter are American, and the best known among them is that called the jumping mouse of Canada, described as a jerboa by General Davis. It is an animal of the dimensions of a mouse, with a very long tail, and of the most extreme agility, as the following extract will serve to show:—"The first I was so fortunate to catch," says General Davis, "was taken in a large field near the Falls of Montmorenci, and by its having strayed too far from the skirts of a wood, allowed myself, assisted by three other gentlemen, to surround it, and after an hour's hard chase, to get it unhurt, though not before it was thoroughly fatigued, which might accelerate its death. During the time the animal remained in its usual vigour, its agility was incredible for so small a creature. It always took progressive leaps of from three to four, and sometimes of five yards, although seldom above twelve or fourteen inches from the surface of the

* Fauna Boreali-Americana, p. 149.

grass; but I have frequently observed others in shrubby places, and in the woods, among plants, where they chiefly reside, leap considerably higher. When found in such places it is impossible to take them, from their wonderful agility, and their evading all pursuit by bounding into the thickest part of the cover they can find."* On the approach of cold weather this curious little creature descends into the earth, and passes the winter in a state of torpidity. Another and more northern species has been more recently described under the name of Labrador jumping mouse.† It is very common in the fur countries, but Dr Richardson was unable to gain any information regarding its history or mode of life.

There are many marmots in North America. They are gregarious animals (belonging to the genus *Arctomys*, Gmel.) which dwell together in amity beneath the surface of the earth. Although they feed on roots and other vegetable substances, yet the somewhat pointed tubercles of the molar teeth indicate a departure from the strictly herbivorous character; and we find, accordingly, that they are easily induced to feed either on flesh or insects. They enter into the torpid state in winter, prior to which they usually become extremely fat, and their epiploon is then furnished with numerous adipose leaflets. When they awake again, on the return of spring, they are very thin, and their weight has been sensibly diminished,—a proof that the fatty substance with which they were previously so amply furnished supports the system, both in hybernation, and during those more trying periods in which they are roused by any accidental increase or alternation of temperature.‡ But a wise and providential instinct in their choice of habitation prevents them from being often exposed to sudden changes in those deep burrows in which they take their winter sleep. About twenty different kinds of marmot are now known to naturalists, of which

* Linn. Trans. vol. iv. pl. viii.
† Godman's American Natural History, vol. ii. p. 97.
‡ See Mangili's Mémoire sur le Léthargie des Marmottes.

above a dozen are natives of North America. Of these we shall here notice only the Quebec marmot, commonly so called (*A. empetra*, Schreber), which inhabits the woody districts of Canada, and extends at least as far north as lat. 61°. Little information has been collected regarding it. Its habits are more solitary than those of its congeners; and although it burrows in the earth, it likewise climbs trees and bushes, probably in search of buds and similar food. Of two individuals killed by the lamented Drummond, one was found on some low bushes, the other on the branch of a tree. Mr Graham says it feeds on coarse grass which it gathers by the river-side. When in good condition its flesh is regarded as a great delicacy, and the Indians procure it by pouring water into its burrows. The fur, which is not at any time of value, when out of season loses its lustre, and the down and most of the hair of the abdomen falling off, the creature itself can be scarcely recognised.* In regard to hybernating animals in general, we may observe, that they do not seem condemned to torpidity by any inherent quality of their nature; for their tendency to assume this long continued and wisely ordered sleep appears to be rather a provisional faculty, mainly dependent on external circumstances, and may consequently be interrupted, postponed, or altogether prevented by regulating the conditions under which the individual is placed. At least it is well known in relation to the marmot of the European Alps (*Mus alpinus*, Linn.), that although, if carefully dug up, it may be carried away without its awakening, the heat of a warm chamber speedily restores it to active life, while, if well cared for in confinement on the approach of winter, it does not assume the torpid state at all.† For a detailed account of the animals of this genus, so numerous in North America, we beg to refer the reader to the works below.‡

* Fauna Boreali-Americana, vol. i. p. 147.
† See Art. Animal Kingdom, in Encyc. Brit. vol. iii. p 167.
‡ Mr Sabine's Paper in Linn. Trans. vol. xiii.; the Appendix

We now arrive at the genus *Sciurus*, which contains the beautiful and graceful squirrels.* Of these the majority are of essentially arboreal habits,—passing their lives among the umbrageous branches of forest trees, where they construct a spherical nest, composed of twigs, leaves, and moss, intermingled occasionally with a portion of fur plucked apparently from their own bodies. A few species inhabit subterranean dwellings at the base of trees. Squirrels, we may observe, are distributed over all the principal countries of the earth, with the exception of New Holland, where, as yet, none has been met with. Buffon, that brilliant but sometimes erroneous writer, was misinformed when he stated as a fact in zoological geography that the species in general were characteristic of the colder and temperate regions of the earth. We now receive many of the finest kinds from the warmest countries of Asia, and even the sultry forests of equatorial Africa are by no means destitute of these agile creatures. The species, however, are much more numerous in North America than in Europe.

The hackee (*Sciurus Listeri*) or ground-squirrel of America is remarkable for never building its nest in trees, although when frightened from its burrows, which it places in small hummocks near the roots, it ascends the trunks with great facility. It is common along the northern shores of Lakes Huron and Superior, and extends southwards as far as Carolina. Whatever we know of the habits of this species is chiefly derived from the writings of Pallas and other European authors, who proceed, however, upon the idea of its supposed identity with *S. striatus* of Northern Asia. The four-banded squirrel (*S. quadrivittatus*) is a small species described by Mr Say.† Its total length, exclusive of the tail, scarcely exceeds four inches. The dorsal portion of the body is

to Franklin's First Journey; Lewis and Clarke's Travels; Pennant's Arctic Zoology; Griffith's Animal Kingdom; Richardson's Fauna Boreali-Americana, already so frequently referred to.

* See a Paper by the Rev. John Bachman in a recent number of the Magazine of Natural History.

† Long's Expedition to the Rocky Mountains, vol. ii. p. 45.

marked by alternate bands of black and white. Dr Richardson describes it as a lively restless creature, very troublesome to the hunters, and often provoking them to destroy it on account of its angry cheruping noise, by which it is apt to alarm the other inhabitants of the forest. When the snow disappears many small collections of hazel nuts, from which the kernel has been extracted by a minute hole in the side, are found on the ground near the holes of this species. It scarcely ever ascends trees by its own free will, but makes its nest in holes on the edges of rocks, and Mr Say informs us that its domicile is filled with an extraordinary assemblage of the burs of xanthium, branches and other portions of the large upright cactus, and small branches of pine trees, and other productions, sufficient in some cases *to fill a cart*. This kind is rather characteristic of the more western territories of America, and is well known on the Rocky Mountains, near the sources of the Arkansas and the Platte. It has, however, been found at the south end of Lake Winnipeg, in lat. 50°, and is common throughout the woody districts as far north as Great Slave Lake. In common with the *hackee*, already noticed, it is named *Le Suisse* by the French Canadians, an appellation which, says Father Theodat, arose from their skins being rayed with black, white, red, and gray, and thus resembling the breeches of the Switzers who formed the Pope's guard.

The black squirrel (*Sciurus niger*, Linn.) is not uncommon on the northern shores of Lakes Huron and Superior, but is not supposed to extend further north than the 50th parallel. It has by some been regarded as only a black variety of *S. cinereus* or *capistratus*, but Dr Harlan says it is distinguished from the dark-coloured individuals of the latter species by the shortness of its tail, and from those of the former by the softness of its hair, and by its nose and ears not being regularly white. We may add that in its geographical distribution it extends farther north than either of the other two. The gray squirrel, however, is also found in Canada,

although probably less abundantly than in the Union. "They inhabit Pennsylvania," says Dr Harlan, "and most parts of the United States; they appear to retire before the intrusion of a smaller species (*S. Hudsonius*). In 1749, a premium of threepence a-head was offered for their destruction, which amounted in one year to £8000 sterling, which is equal to about 1,280,000 individuals killed."

The *flying* squirrels, so called, belong to the genus *Pteromys* of Cuvier, and are characterized by an extension of the skin, which extends laterally from the fore to the hind legs, and thus by acting as a parachute, or rather as an inclined plane, affords great facility in the act of leaping. We believe there are two or three species in North America. *Pt. volucella* is common in the United States, and occurs occasionally in the southern parts of Canada. It was erroneously named *polatouche* by Buffon, from the Russian word *polatucka*, which applies to a European species. The American animal lives well in captivity, is frequently brought alive to our shores, and is even said to have bred at Malmaison in 1809. The Severn river flying squirrel (*Pt. sabrinus*) nearly resembles *Pt. volans* of Europe. It is a Canadian species, and has been observed at Penetanguishine on Lake Huron, as well as at the more northern locality of Moose Factory, James's Bay. It does not, however, seem to extend farther north than lat. 52°, at least in the eastern countries of America. In the direction of the Rocky Mountains an identical or closely allied species is found at the head of the Elk River, and along the south branch of the Mackenzie.

We have next to notice very briefly the genus *Geomys*, or sand-rats,—animals peculiar to America. They burrow in sandy soils, and carry home their food, which consists of acorns and nuts, in their cheek pouches. Under this head we may mention the Canada pouched rat (*Mus bursarius* of Shaw), although doubts have been expressed as to whether it belongs to *Geomys* or *Diplostoma*. It walks awkwardly, but makes its burrows

with such rapidity that the scarcity of museum specimens has been attributed to the facility with which it escapes pursuit by *passing through the soil.* It casts up mounds of loose earth, which have no exterior opening, and vary in dimensions from the diameter of a few inches to that of several yards. Mr Say observes that the habits of this creature are so entirely subterranean that it is rarely seen, and many persons have lived even for years surrounded by their little edifices without having ever observed the singular beings by whose labours they are produced.

A more northern animal, apparently of the same genus, is described by Dr Richardson under the title of mole-shaped sand-rat. It inhabits the banks of the Saskatchawan, lives entirely under ground, and throws up mounds like molehills, but much larger. In winter it probably sleeps some months, or confines itself to its old galleries, as the ground must be then too severely frozen to admit of its working. It is found only in sandy banks, and its food is presumed to consist of roots; at least, however much it may resemble our European mole in its other habits, it can scarcely prey on earthworms, as these do not exist in the districts it inhabits. The same traveller was informed by a gentleman who for forty years had superintended the cultivation of considerable pieces of ground on the banks of the Saskatchawan, that during the whole of that period he had never seen a single worm.*

The Canada porcupine (*Hystrix dorsata*) has been sufficiently noticed in our former volume, where we have also characterized the various species of hares which inhabit North America.† On the history of these then we need not here dilate.

The countries with which we are at present concerned do not, so far as we are informed, produce any animals of the pachydermatous or thick-skinned order. Two imported species, however, of great value, are now

* Fauna Boreali-Americana, note to page 204.
† See Northern Coasts of America, p. 340-343.

well known, viz. the horse and the hog. There are no wild horses in British America, although herds of these animals, descendants from the Spanish stock of Mexico, abound on the vast prairies which extend westwards from the Mississippi. Domestic ones are regarded as objects of great value by many of the wandering tribes of North American Indians,—"for they are not only useful in transporting their tents and families from place to place, but one of the highest objects of the ambition of a young Indian is to possess a good horse for the chase of the buffalo,—an exercise of which they are passionately fond. To steal the horses of an adverse tribe is considered to be nearly as heroic an exploit as killing an enemy on the field of battle; and the distance to which they occasionally travel, and the privations they undergo on their horse-stealing excursions are almost incredible. An Indian who owns a horse scarcely ever ventures to sleep after nightfall, but sits at his tent-door with the halter in one hand and his gun in the other, the horse's fore-legs being at the same time tied together with thongs of leather. Notwithstanding all this care, however, it often happens that the hunter, suffering himself to be overpowered by sleep for only a few minutes, awakes from the noise made by the thief galloping off with the animal."*

Neither is the hog indigenous to any portion of America; but the European settlers now possess many of the domestic varieties, some of which, Dr Harlan states, have been allowed to run wild, and propagate in the western forests. These emancipated hordes have even in a measure regained both their native ferocity and their original characteristics. Their ears in many instances have become erect; and when attacked by bears or other enemies, they unite together for common safety, and forming themselves into a solid triangle, the strongest males with their front to the enemy, the young collected in the centre, they present so formidable a phalanx as to deter the onset even of the most determined foe.

* Fauna Boreali-Americana, p. 231.

The deer tribe of North America has been already treated of in some detail in our volume on the Northern Coasts. We need scarcely recall the reader's attention to these magnificent animals, of which the species, though greatly diversified in size and aspect, are all remarkable for their graceful forms, their light but strong proportions, and the energy and activity of their general movements. They have long been regarded with great interest by the human race, not more as constituting noble objects of chase, than as affording the choicest subjects for the larder. The genus seems distributed over all the greater divisions of the earth, with the exception of New Holland; and its numerous species have in recent years been arranged in many groups, not necessary to be here named. Two remarkable species, the rein deer and the elk, seem common to the northern parts of Europe and America,—five or six are peculiar to North America,—about an equal number characterize the New World, to the south of the equator,—while a still greater variety inhabit China, India, and the great eastern islands. The generality of deer vary in colour according to age and season, and are moreover subject to those peculiar constitutional changes known to physiologists under the names of *albinism* and *melanism*,—the former term being applicable to the white or pale-coloured varieties, the latter to those of a darker hue. A white stag is however of extremely rare occurrence, and M. Desmoulins has remarked the singular circumstance, that this variety is found more frequently in equatorial regions than in the colder countries of the north,—a proof perhaps that the intensity of light and heat are but secondary causes in the production of animal colours.*

The elk or moose-deer (*Cervus alces*) is the most gigantic of the genus. Although formerly found as far south as the Ohio, it now seldom occurs even in the more northern parts of the Union, and the Bay of Fundy may

* Encyc. Brit. vol. xiv. p. 158.

be regarded as its southern boundary on the eastern coast. Small herds inhabit Canada. The rein-deer (*C. tarandus*) is another familiar species common to both the New and Old World; but it is remarkable that while the nomadian tribes of the north of Europe have reduced it to a state of domestication, in which it is of the most essential service to those forlorn tribes, neither Esquimaux nor Indian has in any way availed himself of its capability of being thus reduced to servitude. We are not specially informed how far south this animal extends in America, although we believe that New Brunswick forms its southern boundary on the Atlantic coast. Pennant assigns the northern parts of Canada as its most southern range. Dr Harlan does not state on what authority he regards it as an inhabitant of the state of Maine. Charlevoix, whose work was published some sixty years ago, informs us that in his time it was so unusual for the rein-deer to advance even as far south as Quebec, that he never knew of more than a single instance of its occurrence there. The solitary specimen he alludes to, on being pursued, had precipitated itself from Cape Diamond, and swimming across the St Lawrence, was killed by some Indians encamped on Point Levi. It is still well known, however, both in the island of Newfoundland and in Labrador, and under a more northerly parallel stretches quite across the continent as far as the Pacific shores. There is no reason whatever for supposing that the European representative of this species ever existed among the mountains of the Pyrenees, or in any of the southern countries of Europe,* although we doubt not it extends to a lower latitude than the 60th parallel, its usually supposed boundary. Julius Cæsar, while stating truly the fact of the female rein-deer being provided with horns (an uncommon circumstance in the females of this tribe), records that it was an inhabitant of the Hercynian forest, that

* See "Note sur la prétendue existence du Renne en France dans le moyen âge," in Ossemens Fossiles, t. vi. p. 119 (4th edit. 1835).

"boundless contiguity of shade" which is supposed to have extended as far as the Uralian Mountains; and in truth, a vast quantity of rein-deer bones are still found in the sandy banks of the Oleina, a stream which flows into the Wolga, about forty wersts below Sarepta. Pallas observes that the steppes to the east of that river were of old clothed with forests, and herds of wild rein-deer are still found among the pine woods which extend from the banks of the Oufa, under the 55th degree, to those of Kama. Indeed they are said to proceed even farther south, along the woody summits of that prolongation of the Uralian Mountains which stretches between the Don and the Wolga, as far as the 46th degree. The species thus advances almost to the base of the Caucasian Mountains, along the banks of the Kouma, where scarcely a winter passes without a few being shot by the Kalmucks, under a latitude two degrees south of Astracan.* This remarkable inequality of the polar distances in the geographical positions of this species, according to the difference of meridian, is of course dependent on the laws which regulate the distribution of heat over the earth's surface, as explained by the illustrious Humboldt.† We cannot, however, without an undue digression, enter into that interesting subject in this place. We shall merely mention the well-known fact, that physical climates do not lie, as it were, in bands parallel to the equator, but that the isothermal lines recede from the pole in the interior of continents, and advance towards it as we approach the shores. It thus follows that the farther any northern animal is naturally removed from the ameliorating climatic influence of the ocean, the more extended may be its range in a southerly direction.

The red-deer of America, as described by Mr Warden and other authors (*Cervus Canadensis*, Gmelin, *C. strongyloceros*, Schreber), is quite a distinct species from the animal so named in Britain, being about a fourth larger,

* Encyc. Brit. vol. xiv. p. 159.
† In the Mémoires d'Arcueil, t. iii.

and farther distinguished by the extreme shortness of its tail. It is also a much more stupid creature,—at least so says Hearne. It was imported into this country a good many years ago under the name of *wapiti*, but we know not if any now survive. We introduce its name here on account of its being frequently called the Canadian stag, although in truth it does not seem to exist along the Atlantic coast of America, but is confined to the more western territories. It is well known among clumps of wood along the plains of the Saskatchawan,—living in small families of six or seven combined. Two male wapitis were once found near Edmonton-house, lying dead, their horns firmly locked within each other. They had probably been fighting for the females, and thus died martyrs to their love of gallantry. The flesh of this American red-deer is coarse and dry, being very deficient in the usual juiciness of venison. It is also very slightly prized by the native tribes; chiefly, however, on account of its fat being hard like suet; but its hide is reported to possess the unusual quality of not stiffening inconveniently when dried after being soaked with moisture,—in this respect excelling the leather made either from moose or rein deer. A fine specimen of this animal is preserved in the Philadelphia Museum. It lived nearly thirteen years in the possession of Mr Peale, and measures seven feet seven inches from the extremity of the muzzle to the base of the tail. The length of the horns is three feet ten inches.

The *Cervus macrotis*, or great-eared stag, more usually called the *black-tailed* by American writers, does not occur in Canada. It inhabits the most remote north-western territories of the United States, and does not extend beyond 54°, in which parallel it is never seen to the eastward of longitude 105°.

We may here state, that the beautiful roe-deer (*C. capreolus*) so well known in Scotland, and extensively though somewhat sparingly distributed over what may be called the central zone of Europe, is not found in any portion of the New World. The animal there known

by the corresponding name of *chevrieul* to the French Canadians, and of *roebuck* to the Scottish Highlanders in the service of the Hudson's Bay Company, is the long-tailed or jumping deer (*C. leucurus*, Douglas). Those remarkable animals the Rocky Mountain goat (*Capra Americana*), and Rocky Mountain sheep (*Ovis montana*), do not inhabit the districts of country with which we are now engaged. They are both described, however, in our former volume,—as are likewise the bison (*Bos Americanus*) and the musk-ox (*Ovibos moschatus*).* We here close our account of the quadrupeds of British America.

The Cetacea or whale tribe, having the whole "world of waters" at their command, probably spread over a vast extent of liquid space, and the same species may thus occur on the coasts both of Europe and America, but the actual facts of their geographical distribution are sparingly known to naturalists. Dr Harlan, however, has enumerated fourteen species of this great order which are supposed to occur along the coasts of North America; but Dr Richardson is of opinion that this list, by striking out the synonyms and other corrections, may be reduced to ten. In the present state of our knowledge of these great marine monsters, and "nothing being less certain than their identification with European species bearing the same names," we shall not here attempt any illustration of their history.

The resemblance which the ornithology of North America bears to that of Europe is shown both by the similarity of generic forms where the species differ, and by the actual identity of at least one hundred species. According to the system of C. L. Bonaparte† there are thirty-six different *families* of birds in Europe and thirty-four in North America. Of the European fami-

* Northern Coasts, &c. p. 348-356.

† Geographical and comparative List of the Birds of Europe and North America. 1838.

lies there are four which do not occur in North America, viz. Meropidæ (bee-eaters), Upupidæ (hoopoes), Crypturidæ (the quail-like genus Ortygis), and Pteroclidæ (sandgrouse). Of the North American families there are only two which do not occur in Europe; viz. Trochilidæ (humming-birds), and Psittacidæ (parrots).

There are 246 *genera* of birds in Europe and 218 in North America. Of the European genera there are 109 which do not occur in North America, while of the North American genera there are 81 which do not occur in Europe.

There are 503 *species* of birds in Europe and 471 in North America. Of the European species there are 403 which do not inhabit North America, and of the North American species there are 371 which do not inhabit Europe. We shall here exhibit a list of the species common to both continents.

ORDER RAPTORES.

Aquila chrysaëtos	Surnia funerea
Haliætos leucocephalus	Nyctea candida
Buteo lagopus	Syrnium cinerium
Nauclerus furcatus	Brachyotus palustris
Falco gyrfalco	Ulula nebulosa

ORDER INSESSORES.

Cotyle riparia	Plectrophanes Lapponicus
Bombycilla garrula	Plectrophanes nivalis
Parus bicolor	Corythus enucleator
Struthus hyemalis	Loxia leucoptera
Linota borealis	Erythrophrys Americanus
Linota linaria	

ORDER RASORES.

Lagopus albus	Lagopus mutus
	L. rupestris

ORDER GRALLATORES.

Squatarola Helvetica	Pelidna pectoralis
Strepsilas interpres	Calidris arenaria
Tringa maritima	Actitis macularius
T. canutus	Actiturus Bartramius
T. rufescens	Catoptrophorus semipalmatus
Pelidna subarquata	Macroramphus griseus
P. cinclus	Phalaropus fulicarius
P. Schinzi	Lobipes hyperboreus

ORDER NATATORES.

Chen hyperboreus
Anser albifrons
Bernicla leucopsis
Bernicla brenta
Anas boschus
Chaulelasmus streperus
Rhynchaspis clypeata
Somateria molissima
S. spectabilis
Stellaria dispar
Oidemia perpicillata
O. fusca
Fuligula marila
Clangula Barrovi
C. histrionica
Harelda glacialis
Mergus albellus
Merganser castor
M. serrator
M. cucullatus
Phalacrocorax carbo
Sterna hirundo
S. arctica
S. Dougalii
Megalopterus stolidus
Thalasseus cantiacus
Gavia eburnea
Xema Sabini
X. atricilla
Rissa tridactyla
Rossia rosea
Larus glaucus
L. marinus
L. leucopterus
L. argentatus
Lestris pomarinus
L. Richardsoni
Procellaria glacialis
Puffinus Anglorum
P. obscurus
P. cinereus
Thalassidroma pelagica
T. Leachi
T. Wilsoni
T. Bulweri
Podiceps auritus
P. cornutus
P. rubricollis
P. cristatus
Colymbus glacialis
C. arcticus
C. septentrionalis
Uria Troile
U. Brunswicki
U. grylle
U. Maudtii
Mergulus Alle
Mormon arcticus
M. glacialis
Utamania torda
Alca impennis

To the preceding species we should feel inclined to add the common European magpie (*corvus pica*), upon the supposition that *C. Hudsonicus* is not really distinct from it, and one or two hawks (such as *Falco atricapillus*), though designated by different names, exhibit an extremely close resemblance to certain of our indigenous species. Indeed Dr Richardson's latest catalogue of the birds of North America contains about sixty-two species more than we have here named as common alike to Europe and the Western World; but as these are now regarded as distinct (we presume upon mature deliberation and the most ample opportunities of observation) by the Prince of Musignano, we have freed our list from their enumeration.

In regard to the birds of Canada, and of those other portions of North America to which our present volumes are devoted, we do not find that even a single species is characteristic of or exclusively confined to the countries in question. If permanent residenters in these intermediate territories, then they occur also either in those more northern regions which we have on a former occasion attempted to describe, or they are well known in the United States, to the natural productions of which we shall erelong direct the reader's attention in a work now under preparation. By any lengthened disquisition, therefore, on the ornithology of British America in this work, we should be obliged either to repeat the observations given in a preceding volume of our series, or to anticipate those which may be more fully and suitably stated when we come to treat of the feathered inhabitants of the Union.* But that the general reader may be enabled to form some idea of the ornithological productions of the southern parts of our own America, we shall here avail ourselves of a tabular view which exhibits the amount of species in each family of birds from the latitude of Philadelphia to the banks of the Saskatchawan, including a range of fourteen degrees, and distinguishing those which breed in each district from such as pass onwards to more northern climes.†

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* While writing the preceding paragraph we have had the pleasure to receive from Mr Audubon the fifth and *final* volume of his truly delightful "Ornithological Biography, or an Account of the Habits of the Birds of the United States." We rejoice to see from the concluding lines of his introduction that he has prepared, and is just about to publish, a "Synopsis of the Birds of North America," —a manual which we doubt not will prove of the highest interest and utility to every student of ornithology.

† The table was constructed by Dr Richardson from C. L. Bonaparte's "Specchio comparativo delle Ornitologie di Roma e di Filadelphia," Dr Emmons's "List of the Birds of Massachusetts," and the "Fauna Boreali-Americana." See Sixth Report of the British Association, p. 191.

	Families.	Philadelphia. Lat. 40 deg. N.		Massachusetts. Lat. 42½ deg. N.		Saskatchawan. Lat. 54 deg. N.	
		Breed.	Pass.	Breed.	Pass.	Breed.	Pass.
Order Raptores.	Vulturidæ	1	1	..	..	..	1
	Falconidæ	5	10	6	12	11	3
	Strigidæ	3	6	7	3	9	1
Order Insessores.	Laniadæ	5	2	5	2	8	..
	Merulidæ	8	..	5	4	6	2
	Sylviadæ	9	32	15	14	11	3
	Ampelidæ	6	1	4	1	3	1
	Fringillidæ	16	16	14	14	15	5
	Corvidæ	4	..	2	1	6	..
	Sturnidæ	6	1	7	2	8	..
	Picidæ	7	..	6	1	6	..
	Cuculidæ	2	..	2	..	..	..
	Certhiadæ	4	4	5	..	2	..
	Trochilidæ	1	..	1	..	1	..
	Halcyonidæ	1	..	1	..	1	..
	Hirundinidæ	5	..	7	1	4	1
	Caprimulgidæ	2	..	2	..	2	..
Order Rasores.	Columbidæ	2	..	1	1	1	..
	Pavonidæ	1	..	1	..	..	..
	Tetraonidæ	2	1	3	..	5	1
Order Grallatores.	Tantalidæ	..	3	..	1	..	..
	Ardeidæ	8	4	5	2	2	..
	Scolopacidæ	6	19	7	15	11	14
	Rallidæ	3	3	2	3	2	..
	Charadriadæ	4	4	5	3	3	3
Order Natatores.	Anatidæ	3	28	2	19	14	16
	Colymbidæ	..	6	1	5	6	1
	Alcadæ	..	5	..	3	..	..
	Pelecanidæ	..	7	..	2	3	..
	Laridæ	4	10	6	4	6	10
		118	163	126	113	146	62

From the preceding table it will be perceived how great an increase in the number of breeding birds takes place as we proceed northward; while the amount of permanent or stationary species is diminished. In the environs of Philadelphia 44 species are permanently resident, and these, with 71 which arrive from the north to take up their winter quarters there, raise the amount of winterers to 115. In summer 74 additional species arrive from the south (for the purposes of nidification), which with the 44 first mentioned make an aggregate of 118

breeding species. The remainder of the species contained in the Philadelphia Fauna consist of 48 birds, which merely pass through the district in question during spring or autumn, in their way to or from their breeding quarters; the total amount of species, whether permanent or migratory, being 281. In the Massachusetts list there are 241 species, of which 126 breed within the limits of the state. Dr Richardson and his party detected 208 species on the banks of the Saskatchawan, and of these 146 were breeders, while the permanent species and winter visiters did not exceed 26 or 30. It will be observed that the *Alcadæ* are entirely wanting, owing no doubt to the inland position of the chief points of observation,—Cumberland and Carlton Houses.

The reptile tribes are but sparingly distributed over the remoter parts of North America; and in both the New and Old World they are known to augment in number as we advance towards the equatorial regions. Thus, while Sweden produces scarcely a dozen snakes and lizards, about three or four frogs, and not a single tortoise, the temperate parts of Europe yield above forty snakes and lizards, and several of the tortoise tribe. In Scandinavia, however, although the species are so few in number, the individuals are much more abundant than in Britain; from which we infer that it is rather the want of strong continuous summer heat than the intensity of our winter's cold, that is unfavourable to the production of reptiles in our cloudy clime. Several species, however, even in sultry latitudes in America, are subjected by their peculiar position to the influence of severe cold. The *Axolotl*, for example, a peculiar species of Mexico, occurs in the chill waters of lakes in that country, elevated 8000 feet above the level of the sea; and the salamander (a water newt) of Europe is frequently found frozen up in ice in early spring. M. Dufay, indeed, has remarked as a singular circumstance, that those very animals of which it was once fabled

they could withstand the fiery flames, are in reality endowed with the almost equally surprising power of resisting frost, so generally fatal to the life of reptiles.*

The reptilia of North America are believed to be all specifically distinct from those of Europe; one or two vagrant turtles, probably carried almost unconsciously by oceanic currents, forming no legitimate exceptions. It may be here observed, that the representatives of tropical groups attain to a higher latitude in the Old World than the New, *Emys Europæa* being found in Prussia, while the most northern of the fresh-water tortoises of America is an emys which frequents the river Winnipeg, in the 50th parallel. The great alligator of North America (*A. lucius*), not occurring higher than latitude $32\frac{1}{2}°$ N., does not fall within our present range. Some of the ophidian tribes, or snakes, spread into the fur countries as far as the 55th parallel, where the mean heat is about the freezing point, but where the temperature of the three summer months is at least 66° of Fahrenheit,—little less than the summer heat of the Mexican table-lands. They are of course torpid during winter, and certainly among the most singular features in the general economy of the reptile race may be numbered their power of enduring long-continued abstinence, and the lethargic state, infinitely more profound than the winter sleep of quadrupeds, into which they yearly fall. In Europe the isothermal line of 32° passes through the North Cape in lat. 71° $10\frac{1}{2}'$ N., and thus a few serpents, such as *Coluber berus*, reach Norway. So also lizards (*Lac. ocellata*, or a species regarded as identical with that beautiful reptile) exist as far north as Kamtschatka, though in America none of the Saurian order passes to the north of the 50th parallel.† The Batrachian reptiles, however, are capable of enduring a more rigorous temperature, as both frogs and salamanders are known to reach 67° on the banks of the Mackenzie, where the mean temperature is not above seven or eight

* Encyc. Brit. vol. xix. p. 126. † Report, p. 199.

degrees of Fahrenheit, and the winter cold sometimes descends to more than 90° below the freezing point.* We may judge from these facts of the range of temperature which the reptile class endures, especially if taken in connexion with the statement of Spallanzani, who relates that living frogs have been observed in the thermal baths of Pisa, at a temperature of 115° Fahrenheit.†

For reasons analogous to those already stated regarding the winged inhabitants of British America, we shall also postpone our notice of the Canadian fishes, as of these, few if any are entirely restricted to that country, and even the maritime kinds in the higher north are known to occur along the coasts of the United States.‡

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* Report, p. 202.

† The reader will find various contributions towards a more perfect knowledge of the reptiles of North America, chiefly by Messrs Green, Say, Harlan, and Gilliams, in the "Philadelphia Journal of Natural Sciences," the "Lyceum of Natural History of New York," "Silliman's Journal," and other American publications. Dr Harlan's "Genera of North American Reptiles, and Synopsis of the Species," contains a summary of these papers; and more recently, Dr Holbrook of Charlestown has commenced a "North American Herpetology." A work of wider scope, the "Erpétologie Générale" of M. M. Dumeril and Bibron may also be consulted with advantage, and a list of the species is given by Dr Richardson in the Report recently referred to.

‡ Many species of American fishes are described by M. Le Seuer in the "Journal of the Academy of Sciences of Philadelphia," in the new series of that Journal called the "Transactions of the Philosophical Society," and in the "Museum d'Hist. Nat." of Paris. The "Transactions of the Philosophical Society of New York" contain a paper on the fishes of that state by Dr Mitchell, and a Synopsis of those of the Ohio was published by M. Rafinesque-Smaltz. The third volume of the "Fauna Boreali-Americana" is devoted to the fishes of the northern parts of the New World; and a catalogue of the species, with a few observations on the families and genera, has been published by Dr Richardson in the Sixth Report of the British Association. The great work (Histoire Naturelle des Poissons), by the late Baron Cuvier and M. Valenciennes, of course contains whatever American fishes were known to these authors up to the period of publication (by the last named) of the thirteenth volume, which contains the commencement of the family *Labroïdes*.

The insect tribes of British America are the next to demand a short description. We shall here devote a few additional pages to their history, in consequence of our having treated them with great brevity in our former volume on the Northern Coasts. Many of the genera, and not a few of the species, are identical with those of Europe. We shall endeavour to relieve the monotony of a systematic exposition, by occasional sketches of the habits and economy of the tribes to which our individual examples pertain; but we think it unnecessary to enter into minute descriptive details regarding the majority of the species named.

We may commence by observing that wild uncultivated countries, especially if very densely wooded, are by no means productive of this beautiful order of creation. In truth the melancholy gloom and perpetual moisture which reign in such unpeopled solitudes, where the glad sunbeams can scarcely enter, and where the giant trees cast not their far evening shadows across opening glades of lighter verdure, are nowhere favourable to insect life. These bright and fragile creatures are generally lovers of cheerful sunshine; and although certain species of obscure colours and darkling habits fear that "holy light" which the dim-eyed Milton hailed as heaven's offspring, yet the great majority rejoice to exhibit—"their rich effulgence to the eye of day."

Thus, although by consuming with fire, or by hewing down the primeval forests, the operations of man may destroy many thousand insects, yet the pursuits of the entomologist are facilitated by the still greater numbers which are thereby enabled to penetrate the once umbrageous bowers, and which are brought into view in all the sun-lit spaces, or are found sucking the odoriferous gums which exude from giant trunks, the glories of whose leafy reign has just been terminated by the glittering axe of brawny woodsmen,—

"Where low on earth the princely cedars lie."

Observant travellers have borne frequent testimony to

the fact, that if in the vast virgin forests, especially of South America, a wood-yard is opened, or the trees grubbed up for a space for any other purpose, insects are seen greatly to increase, and a spot which before was like a lifeless solitude, is no sooner relieved from its cumbrous mass of foliage, than the air resounds with the murmuring of innumerable wings. Thus, although the monotony of cereal vegetation may be disadvantageous to entomology in a strictly agricultural country (our farmers possibly suppose the disadvantage mutual), the clearing of woods, and the formation of gardens and shrubberies, which so generally precede or follow human occupation, are rather favourable than otherwise to the pursuits of those who follow our present department of natural history.

We shall now proceed to a few brief notices in systematic order.

Our first coleopterous genus is that named *Cicindela*, of which naturalists are now acquainted with above 200 species. In the larva state these insects inhabit holes on the surface of the earth, the entrance to which, while the occupant lies in ambuscade, is closed by the upper portion of its head. In this condition they are exceedingly voracious,—seizing with avidity whatever insect-prey approaches within their tyrannous grasp. Their bodies are cylindrical and lengthened, and provided with six scaly legs. When apprehensive of danger they suddenly descend into their subterranean dwellings, and when a pair happen to form their domiciles too near each other, the stronger devours the weaker, to prevent interference. When about to change their skins or assume the pupa state, they carefully shut up the entrance to their dwellings. The perfect insects are very beautiful in their external aspect, of light and active forms, extremely swift in their movements, and usually ornamented by metallic colours. The prevailing hues are different shades of golden green, spotted with white or pale yellow. They frequent dry and light or sandy soils, and are extensively distributed over almost every region of the earth.

Several species of Cicindela occur in Canada. We may here name the purple species (*C. purpurea*, Oliv.), of which the green variety may be regarded as the American representative of our *C. campestris*. It is found in many parts of North America, and is subject to a considerable diversity of aspect. A more recently discovered species is the white-lipped cicindela (*C. albilabris*, Kirby), of which the elytra are broadly punctured, with three marginal dots and a broken discoidal band of white. It was taken in Canada by Dr Bigsby, and somewhat resembles our *C. sylvatica*, but differs in wanting the silky lustre, as well as in being of smaller size.

Of the *Brachinidæ*, the blue-winged bombardier (*Brachinus cyanipennis*, Say), is a Canadian species, closely allied to *B. crepitans* of Europe, but differing from it and other species in having the thin white membrane that terminates the elytra, especially at their inner angle, longer and more conspicuous. The most remarkable character of these insects consists in their secretion of a peculiarly caustic liquor, of an extremely penetrating odour. When propelled by them it evaporates with a detonating sound,—from whence their title of *Bombardiers*. The apparatus employed in the production of this fluid has been described by M. Leon Dufour,* and Rowlander informs us that the Brachini are capable of producing eighteen or twenty discharges consecutively. They may be regarded on the whole as southern insects, although five occur in Europe.

Of the genus *Carabus* of modern authors, containing in its now restricted state above 160 species, one of the most interesting of the North American kinds is *C. Vietinghovii*, Adams. The body is very black and glossy, the disk of the prothorax also black, but with margins of a brilliant copper tint, the elytra rough with reticulated longitudinal and transverse elevations, the colour of the disk a fine deep blue, with the sides green, and the mar-

* Ann. du Mus. t. xvii. p. 70, and Ann. des Sciences Nat. t. vi. p. 320.

gins of the same copper hue. When Mr Kirby first received this splendid insect from the western world, he regarded it as a new species, but on comparing it with one from Russia in Mr Hope's collection, he could not detect a specific distinction. "In that specimen the marginal gilding of the prothorax and elytra is greener, with scarcely any of the ruddy hue of copper, which gives such brilliance to the American specimen. It has been observed that the plants on the other side of the Rocky Mountains are of an Asiatic type, and the present animal, and some others I shall hereafter notice, furnish a proof that several of the insects are similarly circumstanced. The sculpture of the elytra of this species is precisely that of a *Procerus*, to which genus I at first referred it, but the tarsi of the male are dilated, which is the character assigned to *Carabus*. The only specimen taken was brought over in spirits, and affords a striking proof of the excellence as well as convenience of that mode of destroying and preserving beetles for transportation. It has been in my custody more than twelve months since it was taken out of the spirits, and it has never been at all mouldy, nor has it ever suffered from the attack of *acari*, &c., from which other insects preserved with it have not escaped; which leads me to conjecture that immersion in spirits, if for a sufficiently long period, renders an insect distasteful to the little devastators of our cabinets."*

Another North American carabus is *C. ligatus* of Germar. It occurs in Canada; and we may observe that the greater number of this remarkable genus are found in the temperate countries of the ancient continent.

The genus *Calosoma*, according to Mr Kirby, is clearly capable of division into two groups,—the first or more typical containing *Cal. sycophanta* and *scrutator*, being distinguished by the golden lustre of the *entire* upper surface,—the second of less brilliant aspect, but distinctly marked by several rows of gilded punctiform

* Fauna Boreali-Americana, part iv. p. 17.

impressions on the elytra. Of the latter division (which forms the subgenus *Chrysostigma*, Kirby), *Cal. calidum* is common in almost all parts of North America, while a new species (*C. frigidum*, Kirby) has been taken by Dr Bigsby in Drummond Island, Canada. It is black underneath, with greenish sides, the furrows of the elytra punctured, the interstices of the furrows elevated with transverse lines impressed, and a triple series of bilobed obscurely gilded punctiform impressions, the margin greenish, and the posterior angles of the prothorax depressed. It is nearly an inch long.

Canada produces several species of the genus *Chlænius* of Bonelli, such as *Ch. sericeus*, Say, and *Ch. quadricollis* and *cordicollis*, Kirby. Nearly 120 species are known to naturalists. They seem rare, however, in the southern division of the new world, and, so far as we know, have not yet been found in Australia. An African species, mentioned by Olivier, is used by the natives as a substitute for soap.

In the more northern parts of the British possessions in America we meet with a well-known European insect, *Platynus angusticollis*. It has been taken in lat. 54° and 65°, and in the former of these parallels were found the six following species of *Agonum;* viz. *A. extensicolle, picipenne, sordens, melanarium, seminitidum*, and *cupripenne*. The last named is a lovely insect, representing our *A. sexpunctatum*, the most brilliant of the European species, which, however, it far exceeds in beauty. We are acquainted with upwards of sixty species of this genus, of which a considerable number are American. Of these we may name a recently described example (*A. erythropum*, Kirby) taken in Canada by Dr Bigsby. It is black, glossy, bronzed above, the prothorax narrower behind, the elytra with three punctiform impressions, and the legs dusky red. It is the American representative of our common *A. parumpunctatum*. It is, however, larger and more bronzed, with the impressions remoter and less distinct.

Several new species of *Argutor* were taken by our

expedition, chiefly about lat. 54°; while in that same latitude, as well as in 65°, a great many examples were observed of that well-known British insect *Omaseus orinomum*. It is believed to be very common in North America, although it has not been noticed by Mr Say, nor collected in Canada by Dr Bigsby, nor in Nova Scotia by Dr Macculloch or Captain Hall. Another British species, *C. nigrita*, likewise occurs in the same country, and examples of the genera *Curtonotus* and *Pœcilus* are well known there. Our common Amara, *A. vulgaris*, occurs in the north-eastern districts, as well as among the more distant Rocky Mountains. Many species of the genus *Harpalus* were found abundant in lat. 54°, and two British insects, *Lopha quadrimaculata* and *Bembidium impressum*, were frequently caught in the course of a journey from New York to Cumberland House. The latter insect seems rather generally spread, and was taken in Canada by Dr Bigsby. "In England," says Mr Kirby, "it has been rarely met with; the only known British specimen was in the late Mr Marsham's collection, and is now in Mr Stephens's." According to Olivier it is found on the banks of the Seine, near Paris, and it is mentioned as a Swedish insect by Gyllenhal, and as occurring there on the sandy shores of lakes, where it is remarkable in warm weather for the celerity of its movements. Mr Drummond observes regarding the American variety, that it runs in the sand with great agility, and frequently flies when attempted to be taken.* Linnæus had long ago remarked regarding his *Carabus velox* (supposed to be identical), that it ran and flew with the greatest velocity of any Coleopterous insect,—a circumstance, as Mr Kirby remarks, which, as well as its large eyes, proves its title, in common with *Elaphrus*, to claim some affinity with the *Cicindelidæ*.

Of the genus *Elaphrus*, a new species named *El. intermedius*, has been taken in Canada. It resembles our *El. cupreus*, but is quite distinct.

* Fauna Boreali-Americana, part iv. p. 59.

Of the water-beetles, several species of *Colymbetes* have been collected by Dr Macculloch in Nova Scotia, none of which, however, are identical with those of Britain. Some new *Dytisci* were taken by an expedition in the countries to the north of Canada, and the channel-necked Gyrinus, *G. impressicollis*, has been described as a recent acquisition in our provincial territory. It resembles our *G. marinus*, but is much larger, and is sufficiently distinguished by the deep furrow or channel which runs quite across the prothorax. Two British species of the genus also occur in North America,—*G. æneus*, which is found in Canada, and *G. minutus*, of which a single specimen was captured in lat 65°. The singular auriform shape of the antennæ of these insects induced M. Latreille to form the genus into a family group along with *Parnus*, under the title of Otiophori; but at a future period he made it to approximate the *Dytiscidæ*,—thus correcting the error he had previously committed of confounding, as Mr Macleay observes, a relation of analogy with one of affinity. The Gyrinidæ are natives of almost all the regions of the earth. They live in society, and several species are extremely common on our ponds and ditches by the wayside, swimming flat upon the surface, with their shining backs above water, and chasing each other in intersecting circles, or darting about in more irregular gyrations. They fly well, and transport themselves with ease and rapidity from place to place, but when persecuted on the water always prefer to escape by diving.

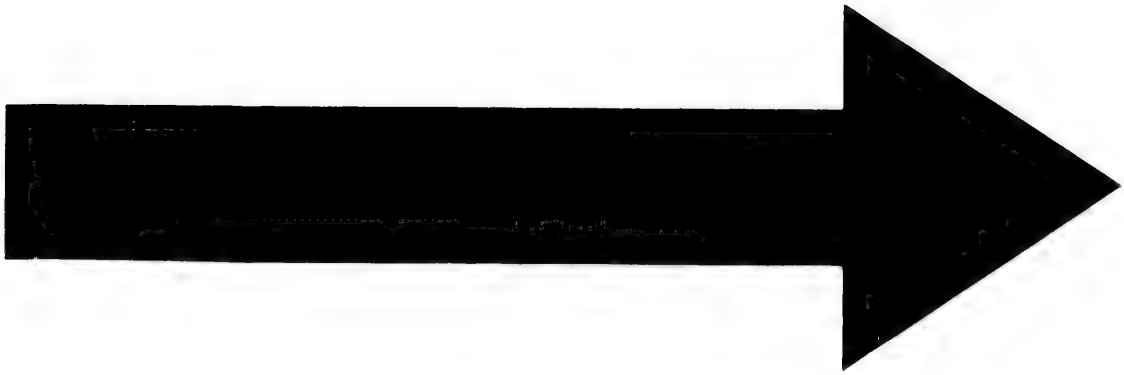
Of the Staphylinidæ or brachelytrous insects, we are acquainted with no great number from the countries now under consideration. In their habits they somewhat resemble the Silphæ and Necrophori. They have usually a large flattened head, strong mandibles, short antennæ, and a thorax as wide as the abdomen, which is long, narrow, and generally depressed. The elytra are very short and truncated, although they still suffice to cover the long narrow membranous wings, which, when not in use, are compactly folded. The upper portion of the seg-

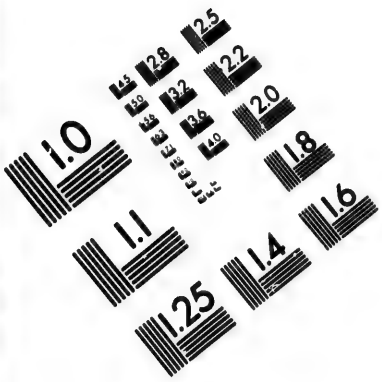
ments of the abdomen being much exposed, is of a firm consistence, contrary to the usual character of that part of the body among the coleopterous tribes. From the terminal segment of the abdomen two vesicles are protruded or withdrawn at the will of the insect, and from these, when irritated, a subtile vapour makes its escape with a strong odour of sulphuric ether.* "Though most of the micropterous species," Mr Kirby observes, "have a fetid smell, yet there are some exceptions to this among them. One species (*S. suaveolens* related to *S. micans*, Grav., which I once took, exactly like a fine high-scented ripe pear; another, *Oxytelus morsitans*, like the water-lily; a third, *O. rugosus*, like water-cresses; and lastly, a fourth (*S. fuscipes*), like saffron." The species in general usually occur under stones, in earth, and excrementitious substances. Some live in mushrooms and fungi, or in rotten wood, while a few of the smaller species are found on flowers. They are all swift, active, and voracious. We shall now name a few of the North American kinds.

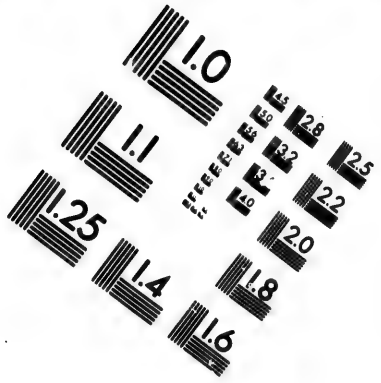
Pæderus riparius, a well-known British insect, occurs in lat. 54°, where are likewise found several species of *Lathrobium*, of which *L. bicolor* of Gravenhorst is well known in Canada. *Philanthus politus* was taken in Nova Scotia by Captain Hall. Of the genus *Staphylinus*, properly so called (*St. crysurus*, Kirby), was captured in the last-named country. It resembles our *St. hybridus* and *maculosus*, but is well distinguished by its golden tail and breast. It is one of the smallest of the genus, measuring about five lines and a half. *Creophilus villosus*, Kirby, an insect which has been taken in England, occurs both in Canada and Nova Scotia. It greatly resembles our common *C. maxillosus*.

The family *Elateridæ* corresponds to the ancient genus *Elater* of Linnæus, and differs from the Buprestidæ, among other characters, in the posterior style of the

* Art. Entomology, in Encyclopædia Britannica (7th ed.), vol. ix. p. 136.







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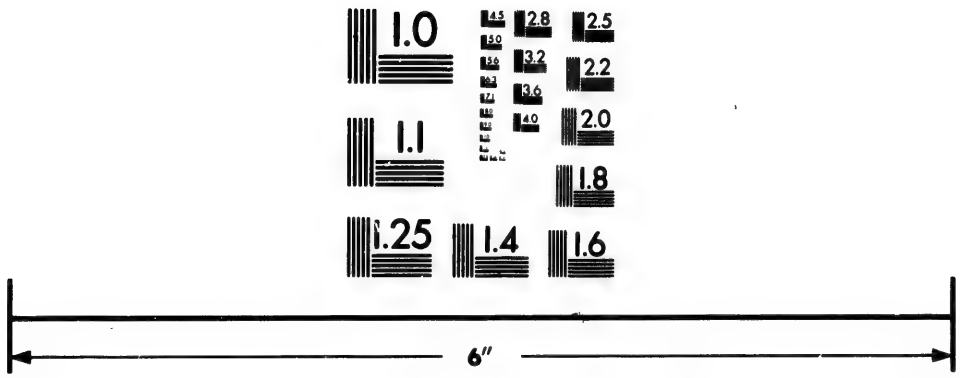

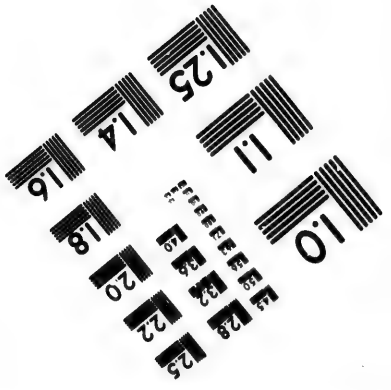

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præsternum being prolonged into a sharpish point or spine, laterally compressed. The use of this organ becomes obvious after studying the movements of the living insects. The legs are so short, that when these creatures fall upon their backs, which they frequently do while dropping from a plant upon the ground, they can only assume their natural position by bringing the projecting point of the præsternum into sudden contact with a groove placed in the front of the mesosternum. In their early state these insects do great injury to field and garden produce, and the destructive grub, so well known under the name of wire-worm, is the larva of an elater. Some of the American species are remarkable for their phosphoric splendour, and are often seen twinkling like stars among the leafy herbage when the shades of night have fallen upon the dewy forests.

If several ancient nations were worshippers of the sun, and regarded holy light as a divine effulgence, we need scarcely wonder that in remote times, when natural phenomena were but inaccurately observed, every manifestation of a supposed celestial principle should excite the wonder as well as the admiration of mankind. We consequently find many exaggerated accounts of these mysterious nocturnal lights, although the natural phenomena which they exhibit are in themselves of such singular beauty as to need no aid from fictitious ornament to render them deserving of our most attentive study. However wonderful may be the effect produced by the glow-worms and other fire-flies of Europe, their splendour, according to Humboldt, cannot be compared in richness to those innumerable scattered and moving lights that in America embellish the nights of the torrid zone, and seem to repeat on earth, along the vast extent of the savannahs, the spectacle of the starry vault of heaven.* How beautifully does Dr Southey, in his Madoc, describe the effect produced by these woodland insects on the minds of the first settlers in the Western World :—

* Encyclopædia Britannica, vol. ix. p. 142.

"Sorrowing we beheld
The night come on; but soon did night display
More wonders than it veil'd; innumerous tribes
From the wood-cover swarm'd, and darkness made
Their beauties visible: one while they stream'd
A bright blue radiance upon flowers that closed
Their gorgeous colours from the eye of day;
Now motionless and dark eluded search,
Self-shrouded; and anon, starring the sky,
Rose like a shower of fire."

Most of the elateridæ are recognised by their narrow, elongated, and somewhat flattish forms. We have not fewer than sixty British species, arranged, according to the modern views, under not less than twenty genera. Several of the more southern groups contain large and imposing species, but the majority of the North American kinds are, like those of our own country, more restricted in their dimensions,—seldom exceeding half an inch in length. Several species, belonging to various genera, are natives both of Canada and Nova Scotia, and of these *Perimecus fulvipes* may be mentioned as also British.

Of the brilliant *Buprestidæ*, the greater proportion is found in warmer and more genial countries than those now under consideration. These insects are clearly distinguished from the elaters by never leaping: they all walk slowly, but fly well during dry and sultry weather. When an attempt is made to seize them they drop as if dead towards the ground, doubtless with a view to conceal themselves amid the subjacent herbage. Several of the minor species are found on flowers, but the majority occur in forests and among depots of timber. The abdomen of the female is furnished at its extremity with a coriaceous or horny conical appendage, composed of three pieces, constituting the terminal abdominal rings, and which may be regarded as a species of ovipositor, by means of which she places her eggs in safety within dry or decayed timber, in which the larvæ dwell. The perfect insects not unfrequently make their appearance in countries where they were never seen before, having been involuntarily transported in foreign wood, while in the state of nymph or larva. The Buprestidæ are

very common in South America and other sultry regions; but they decrease in numbers as we advance northwards into temperate regions, and altogether disappear in colder climes. Scarcely a score occur in Britain, and of these we are not aware that even one has yet been found in Scotland. Professor Klug informs us, that in the Berlin Museum there are upwards of 500 species of the Linnæan genus Buprestis. A few, such as *B. lineata* and *fasciata* of Fabricius, are found in Canada and Nova Scotia, while others occur as far north as lat. 65°, as well as westward among the Rocky Mountains. The two first named countries produce a few species of the genus *Trachys*.

The *Malacodermi* of Latreille are distinguished from the preceding by their bodies being of a soft and flexible nature. A British insect, *Necrobia violacea*, was taken abundantly in North America by our exploring party. It is said to live on carrion, and is richly adorned for so foul a feeder. The species seem widely distributed; for while that just named is common alike to Europe and the Western World, *N. ruficollis* is found in Europe, Africa, and the East Indies. Of the soft-winged beetles, the genus *Telephorus* is also well known in North America. These insects abound in meadows during the summer season, especially on umbelliferous plants; but one of the most remarkable incidents in their history consists in the frequency with which they are carried into the upper regions of the air in great quantities by violent winds,—thus in their descent giving rise to what are sometimes denominated *insect showers*.

To the Malacodermous division also belongs the remarkable genus *Lampyris*, which contains the insects commonly called *glow-worms*. The beautiful light which emanates from these creatures constitutes their most interesting attribute. The substance from which the luminous property results has been the subject of frequent experiment and observation.* It is obviously under

* Regarding the luminous properties of the glow-worm, and the nature of its light, see Ann. de Chimie, t. iv. p. 19, Phil. Trans. for 1810, and Kirby and Spence's Introduction, vol. ii. p. 423.

the control of the animal, which, when approached, may frequently be observed to diminish or put out its light. The only species with which we are acquainted from British America is *Lampyris corusca*, Linn. It occurs in Canada, and has been taken at least as far north as lat. 54°. It was originally described by the great Swedish naturalist as a native of Finland and Russia, on the authority of Uddmann, but has not since been found there; and Mr Kirby conjectures that the latter may have mistaken an American for a European specimen.

Various well-known wood-eating insects, belonging to the Malacodermous group, are found in North America. Such is a species of *Anobium*, nearly related to our British *A. striatum*, and described by Mr Kirby under the specific name of *foveatum*.* This genus was instituted by Fabricius, and was probably named from *αναβιον*, *resuscitated*, the species being remarkable for their pertinacious simulation of death, and their reassumption of activity so soon as they deem themselves restored to safety. In the larva state they are extremely injurious to old furniture, in which they perforate numerous round holes, from which practice they have received from the French the name of *vrillette*, or little gimlet. They resemble small, soft, whitish maggots, with six short minute legs. The singular superstition of the *death-watch* has arisen, in a great measure (though other insects share in the mysterious calling), from a species of this genus. It is believed that this ticking sound, sufficiently solemn amid the stillness of a sick-chamber to those who through the long-enduring darkness "watch for the morning," is nothing more than the signal call of the sexes of these insects to each other. It closely resembles the effect produced by a slight tapping on a table with the finger-nail; and where the insects are abundant, they may easily be induced to make their mysterious ticking in answer

* Fauna Boreali-Americana, part iv. p. 190.

to that imitative sound. They produce it mechanically, by beating their little heads against the plane of their position. "He that could eradicate this error," says the quaint Sir Thomas Brown, alluding to the death-tick, "from the minds of the people, would save from many a cold sweat the meticulous heads of nurses and grandmothers."*

Of the important genus *Necrophorus*, we find *N. velutinus*, *Halli*, and *Hebes*, in Nova Scotia. The singular habits of the Necrophori have long attracted the attention of European naturalists. The most marked peculiarity in their manners consists in their habit of interring small animals, such as mice and moles, for the purpose of depositing their eggs in the decaying carcass. To effect this operation, they remove the earth from beneath the dead body, which sinks into the hollow, and is afterwards covered with the looser or upturned soil of the excavation. Their sense of smell, like that of many other insects, is extremely delicate, and no sooner has any small quadruped perished than one or more of these gravediggers make their appearance, and in a few hours the corpse is interred. There are seven British species of this genus, which contains in all about thirty species, the whole of considerable size, and of which the majority are native to Europe and North America.

The less numerous genus *Necrodes* is more extensively distributed; species being found in Europe, Asia, and Africa, North and South America, and New Holland. They are usually seen along the seashore, and on the banks of rivers, beneath seaweed, carrion, or such like. A South American species (*N. Surinamensis*, Lat.) has been taken in Nova Scotia by Dr Macculloch.

Of the genus *Oiceoptoma*, Leach (*Silpha*, Linn.), a good many occur in North America. Of these, *O. Lapponicum* is a native of Canada. In the Old World, it abounds in the huts of the Laplanders, devouring what-

* Pseudodoxia Epidemica.

ever it can lay its jaws upon, whether flesh, fish, or skins. *O. Americanum* is a larger species, with brownish black elytra, and the shield of the thorax pale reddish yellow. The sides of the elytra, as first observed by Mr Kirby, are resplendent with a lustre between bronze and gold. It occurs in Nova Scotia, in common with several other species. *O. Canadensis* was taken on dead fish on the shores of Lake Huron by Dr Bigsby.

Two British insects, belonging to separate families, *Peltis ferruginea* and *Nitidula obscura*, were taken in the course of Dr Richardson's journey to Cumberland House, as were likewise *Nit. ossium* and *discoidea*.

Of the Dermestidæ, *Attagenus pellio*, so frequently found in houses, and so destructive to furs or other animal matters, and *Dermestes lardarius*, both British insects, have been taken by Captain Hall in Nova Scotia. Latreille observes, that the latter insect occurs in every quarter of the Old World, feeding indiscriminately on all animal substances, whether dried or putrescent. Another species, *D. dissector*, found in Canada, is, so far as we know, confined to the Western World. Three species of *Byrrhus* (*B. picipes*, *concolor*, and *cyclophorus*) were procured to the north of Canada, and between New York and Cumberland House a British species of the same genus, *B. varius*, was met with.

Of the more aquatic genus *Hydrobius*, some British species, such as *H. fuscipes*, *marginellus*, *melanocephalus*, inhabit about lat. 54°.

Of the great group of Lamellicorn beetles British America furnishes some interesting species; and of the genus *Onthophagus*, a new species, *Onth. scabricollis*, was taken in Canada. The species in general are remarkable for the great variety of horn-like processes with which the heads of the males are armed, and the genus is one of the most widely distributed of any, occurring under almost all climates, from the great Eastern Islands and Australia, northwards to the frigid zone. Dejean's Catalogue contains 150 species, of which we have eight or ten in Britain. Some beautiful species of

small size inhabit India and Africa, although (rather an unusual circumstance) the largest kinds occur in temperate regions. They are almost the only coprophagous or dung-eating insects found in New Holland; a circumstance which Mr Macleay attributes to the absence from that great insular continent of all the larger herbivorous mammalia not of the marsupial kind.

Trox arenarius, a British insect, occurs in Nova Scotia. Of the family Rutelidae, we find *Pelidnota punctata* in Canada, near Lake St Clair. It is the only species known to the north of Mexico, and the genus itself is peculiar to America.

The new genus *Camptorina*, Kirby, nearly allied to *Serica*, Macleay, is found both in Canada and Nova Scotia, which likewise produce a species of each of the genera *Diplotaxis* and *Rhizotrogus*. Of the genus *Dichelonycha*, Harris, the species, as far as yet known, seem confined to the northern parts of the New World, at least Mr Kirby knows of none to the south of the province of Massachusetts. The type of the genus is *Melolontha linearis* of Herbst. *D. virescens* and *testacea* occur in Canada.

The magnificent genus *Cetonia*, of which Dejean's Catalogue contains 125 species, is chiefly characteristic of the Old World, and the majority of such as occur in America are found in Mexico. *C. fulgida*, however, has been taken in Canada at Lake St Clair. Several species of *Trichius* are found both in Canada and Nova Scotia.

The *heteromerous* section of the Coleoptera consists of those groups which have five articulations to the first four tarsi or foot-joints, and four to the hindmost pair. All these insects feed on vegetable substances.

The first we have here to notice belong to the family *Melasoma* of Latreille, a group composed for the most part of blackish or dark-coloured species, a character from which they derive their general name.* They

* From μιλας, *black*, and σῶμα, *body*.

are usually apterous, with the elytra as it were soldered together. The eyes are oblong, and but slightly elevated; a feature which, according to M. Marcel de Serres, indicates nocturnal habits. All these insects dwell upon the ground, either in sandy soils or under stones, and they are not unfrequently found in cellars, and other dark and sombre places. They correspond pretty closely to the ancient unrestricted genus *Tenebrio* of Linnæus. Such is *Upis ceramboides*, a species taken in Canada by Dr Bigsby, and which, according to Gyllenhal, inhabits tree fungi, especially such as grow upon the genus *Betula*. A well-known British insect, *Tenebrio molitor*, is found in Nova Scotia. With us it appears in the evening, in the least-frequented parts of houses, and is likewise often seen in flour-mills and bakehouses. Its larva, usually known under the name of meal-worm, is a long, smooth, cylindrical maggot, of an ochry yellow colour and scaly texture, which lives among bran and flour, and forms, when collected by bird-fanciers, a favourite food for domestic nightingales. It sometimes occurs in the interior of the human body. We have three or four species of the genus in Britain, and the one just named was, in all probability, imported unintentionally in flour-barrels to North America. Another species, *T. Pennsylvanicus*, which Knoch says dwells beneath the bark of trees, is native to the northern portions of the New World.

Leaving Melasoma, we enter the family *Taxicornia*, Lat., of which all the species are winged, the body, usually of a square form, with the head either concealed by or received into the thorax. The greater proportion of these insects occur in tree fungi, or beneath the bark of trees. Such are *Bolitophagus cornutus*, a Canadian species, which inhabits the boletus of the birch in the vicinity of Lake Huron, and *B. obcordatus*, a new species taken in Nova Scotia by Captain Hall.

The family *Stenelytra*, Lat., presents us with species of much more active habits than the preceding. Though some conceal themselves beneath the bark of trees, the

majority occur on flowers and foliage. *Miracantha Canadensis* of Kirby belongs to the Helopidæ. Two other Canadian insects are *Cistela erythropa*, Kirby, and *Xylita buprestoides*, Paykull, the latter of which is likewise a British species.

Of the family *Trachelides*, Lat., the body is usually soft, and the elytra soft and without striæ. The head is somewhat triangular or heart-shaped, and borne upon a kind of neck or pedicle. The majority devour the foliage of plants, or suck their nectarous juices, and many, when handled, bend their heads, contract their limbs, and simulate death. Others exhibit great activity. The first North American example we have here to name is *Notoxus monodon* of Say. It occurs in the United States, and has been found as far north as lat. 65°.

The blistering beetles (*Vesicantia*) belong to the tribe Cantharidæ of the great French entomologist, and were all originally included in the genus *Meloe* of Linnæus, now greatly subdivided. *Cantharis unicolor* is a native of Canada, where, however, we are not aware of its being used for medicinal purposes, although *C. vittata*, Fab., is so in the United States. The species of the genus *Meloe*, as now restricted, are awkward and misshapen insects, of slow and sluggish movements. They are usually seen either crawling heavily along the surface of the ground, or on plants of lowly growth. Latreille is of opinion that these vesicatorial insects are the *Buprestides* of ancient writers. Destructive effects were attributed to them when inadvertently swallowed by cattle. They are almost all characterized by dark or sombre colours, though one is rather of a greenish golden hue. The genus may be regarded as characteristic of Europe. Eight or nine species are natives of Britain, and of thirty-two in Dejean's Collection, twenty-four are European, six North or South American, one Asiatic, and one African. A few of the European kinds are also found in Eastern countries. In certain districts of Spain these insects are employed instead of

cantharides, or combined with them. Their larvæ are supposed by some naturalists to be parasitical on the bodies of winged insects, chiefly Hymenoptera. Two new North American species were taken by our exploring expedition in lat. 65°. They have been named *M. nigra* and *impressa* by Mr Kirby.*

The *tetramerous* section of the Coleopterous order is composed of numerous and important groups, distinguished by possessing four articulations to all the tarsi.

The rhynchophorous or snout-bearing beetles are among the most remarkable of Coleopterous insects, whether we consider their great amount of species, the splendour of their external aspect, or the occasional ravages which they commit in our forests, fields, and granaries. Above 3000 species are now known to naturalists, and even in Britain alone we can muster above 500 indigenous kinds. They are, in a general way, recognisable by their more or less extended muzzle, terminated by a mouth, of which the parts, from their peculiar structure and position, are not easily determined without the aid of microscopical investigation. The abdomen is of a comparatively bulky form, the antennæ are club-shaped, with an angular bend, and in many tribes the posterior thighs are dentated. The larvæ resemble small white maggots, of an oblong form, and very soft in texture. They live by gnawing the various parts of plants, and many species, dwelling exclusively in the interior of fruits and seeds, do great damage to the farmer, grain-merchant, and horticulturist. A few, such as the Brachyceri, are believed to live beneath the ground, and to feed on roots. It may easily be imagined that in so numerous a family much diversity occurs, both in habit and external structure. Many of the South American species are of considerable size, and of such exquisite beauty, that they may fairly be regarded as the most splendid examples of their order. Such are *Entimus imperialis*, commonly called the diamond-

* Fauna Boreali-Americana, part iv. p. 242.

beetle, and *Ent. regalis*, an insect, still of great value, of which in former days a single specimen has been known to sell for £20. Others, of almost equal beauty, are known under the specific names of *fastuosus*, *sumptuosus*, *nobilis*, and *splendens*, titles which sufficiently attest the lustre of their bright attire, and the unfeigned admiration in which they are held by the lovers of nature.

North America, however, is much less productive in the Rhynchophora than the southern portions of the New World. *Calandra pertinax* occurs in Canada. The insects of this genus are but too well known, under the name of *weevils*, for their destructive ravages in grain. The most noted and injurious is *Cal. granaria*, fortunately rare in most northern countries. The female commences her maternal labours about the month of April, and continues them until the autumn. She first buries herself in a heap of grain, to the depth of several inches, and then begins to pierce their integument, probably by means of a little dart concealed beneath the lower portion of the proboscis. The envelope is then raised, and a small hole bored either in an oblique direction or parallel with the surface of the grain. A single hole is made in each grain, and a single egg is laid in each hole, after which the opening is closed by a glutinous matter, so nearly resembling the colour of the grain, that it is extremely difficult to discover which is in a sound state, or which may contain the germ of a deadly and insidious foe. The injured grains may, however, be detected by their floating when immersed in water, being lighter than the rest of the store. The egg soon produces a minute maggot, which devours the interior of the corn. According to De Geer, a single pair of these weevils will produce (among themselves and their descendants), during the lapse of one season, 23,600 individuals; so that a few hundred weevils flying through the grating of a granary, and settling among its treasured heaps, might, in the course of not

many months, destroy between *one and two hundred millions* of grains.*

In certain American countries, to the south, however, of those on which we are here intent, the larva of a large species of Calandra (*C. palmarum*), called *ver palmiste* by the colonists, forms a favourite article of food, and is frequently fried and eaten, both by Indians and Creoles. It lives in the heart of palm-trees.

Of the genus *Hylobius*, of which the larvæ are very destructive to firs, we find a new species captured in Canada by Dr Bigsby, and named *H. confusus* by Mr Kirby; and the same observer has also possessed himself of several *Attelabi*. A variety of *Apotomus ovatus*, Fab., occurs near Lake St Clair. Of the genus *Anthribus*, usually found on old wood, though some inhabit flowers, the banded species, *A. fasciatus*, is a native of Canada.

The singular genus *Chlamys*, of Knoch,† so named from its presenting the aspect of a coat of mail, is represented in Canada by *Ch. plicata* of Olivier. It does not measure more than two lines in length. Nothing is known of the history or transformations of these insects, all of which, so far as yet ascertained, are natives of the New World, especially of Brazil, a country remarkable for its entomological riches. The upper surface of their bodies is extremely rugged and unequal. In a state of repose they draw their legs and antennæ into the closest contact with the body, and, when not in motion, would with difficulty be recognised as living creatures. They are still comparatively rare in collections, although above 160 species are now known to naturalists.

The last of the rhynchophorous genera to which we shall here allude is that called *Bruchus*. The species deposit their eggs in the yet tender germs of leguminous plants, of our most valuable grains, such as coffee and palms, where they often occasion infinite damage. The

* Encyclopædia Britannica, vol. ix. p. 175.
† Neue Betrage zur Insectenkunde, p. 122.

insect, when issuing forth in the perfect state, detaches a cap-shaped portion of the epidermis, and produces those circular holes so often seen in peas and beans. Such is a small species called *B. pisi*, which has been known to commit great injury in North America.

Several insects belonging to wood-devouring genera, of the family *Xylophagi*, Lat., such as *Cis*, *Tomicus*, *Apate*, and *Hylurgus*, were taken in the course of Dr Richardson's expedition, but chiefly in countries northward of Canada.

We have now to take a glance at the capricorn or long-horned beetles, which abound in the wooded regions of all warm countries,—their larvæ living in the interior or beneath the bark of trees. These larvæ are of a soft consistence, pale in colour, large anteriorly, with a squamous head furnished with strong mandibles, but without any other projecting portions. They are extremely destructive to the larger forest trees, piercing them to a considerable depth in all directions. A certain number gnaw the roots of plants. The abdomen of the female, in the perfect state, is terminated by a tubular corneous iduct; and several species produce a sharpish sound, by rubbing a portion of the thorax against the pedicle which attaches the base of the abdomen. Lister calls it querulous, while Dumeril compares it to the braying of an ass. It is by reason of this peculiarity that *Prionus coriarius* is called the *fiddler* in the German States. Of this numerous and gracefully formed family some are nocturnal, and frequent old woods and the trunks of ancient trees; others occur on flowers, or among flowering shrubs and hedges in blossom, and are richly gilded and adorned with various colours;—while all are remarkable for their elongated bodies, their lengthened limbs, and their long and delicately formed antennæ. Several of the species (such as *Prionus gigas*) are among the largest of known insects, measuring above half a foot in length.* The larvæ of *P. cervicornis*, which

* Dictionnaire Classique d'Histoire Naturelle, tome xiv. p. 282.

dwell in the wood of the gossam pinus, are used as food by certain tribes of the human race. A European species, *P. coriarius*, is one of our largest British insects. The larva lives in the decaying trunks of oaks and birch trees, but undergoes its metamorphoses under ground.

We shall here name a few of the capricorn beetles which occur in Canada and Nova Scotia, and are no doubt more extensively distributed over other portions of British America, as well as through some of the territories of the United States:—*Monochamus confusor* and *marmorator*; *Callidium agreste*, *collare*, and *dimidiatum*; *Clytus undatus*, *lunulatus*, *fuscus*, *longipes*; *Rhagium lineatum*; *Pachyta liturata*; *Leptura chrysocoma*, *subpubescens*, *erythroptera*, *Canadensis*, *tenuior*, *brevis*, *semivittata*, and *gulosa*.

Of the small phytophagous or herbage-eating beetles of Latreille's family Cyclica, we are acquainted with several species in British America. For example, the genus *Cryptocephalus*, in which the head seems as if it were plunged vertically into an arched or hood-like thorax, so that the body, when viewed from above, appears as if decapitated, yields us two Canadian kinds, *C. pubescens* and *notatus* of Fabricius. The genus *Eumolpus* is there represented by a species, well known also in Europe, *Eu. vitis*, of which the larva, according to Geoffroy, is extremely destructive in vineyards.

The beautiful and highly adorned genus *Chrysomela*, so named from two Greek words which signify an apple of gold, although of great amount in species,* and extensively distributed over the Old World, seems comparatively rare in North America. We, however, find a United States species, *Ch. Philadelphica*, spreading both

* Comte Dejean was many years ago in possession of 120 species, and it is known that his collection has since been much augmented. Even in Britain we possess above thirty species, exclusive of fourteen kinds of Phaedon, and six of Melasoma, which are closely allied in their generic characters.—Encyclopædia Britannica, vol. ix. p. 184.

into Canada and Nova Scotia, while a nearly allied but distinct kind (*Ch. confinis*, Kirby) has been lately taken in the latter country by Captain Hall. Another new species, *Ch. Bigsbyana*, was captured in Canada, and a well-known British insect (*Ch.* 10.*punctata*, Steph.) was taken somewhere in the course of Dr Richardson's expedition. The genus *Phaedon*, which closely resembles Chrysomela, produces three British species in America, viz. *Ph. adonidis*, *raphani*, and *polygoni*, of which the former two occurred in lat. 54°, the last in Nova Scotia. *Phaedon vitellinæ*, which forms the genus *Phyllodecta* of Kirby, is also found in our American provinces.

The more active genus *Altica* is distinguished by its leaping powers. The species are of small dimensions, and occur in great numbers during the spring, in humid places, where they are extremely destructive, both in the larva and perfect state, to potherbs and other garden produce. *A. nemorum*, called by farmers the *fly*, and *black jack*, attacks the turnip crops, and is calculated to have caused a loss in a single year in Devonshire alone of not less than £100,000.* Two new species (perhaps the fewer novelties in this line the better) named *A. vicina* and *puncticollis*, have been lately observed in British America. Several *Galerucæ*, and at least one species of *Hispa*, occur in Canada.

Of the family Eupoda of Latreille, one of the principal genera in these northern countries is *Donacia;* insects which are frequently bronzed or gilded in their aspect, and are in many cases covered over by a minute silky down, which seems to preserve them from the action of water. They are found on reeds and other aquatic plants, and are often submerged by the action of the wind and waves. The genus is extensively distributed over the continent of Europe, of which it may be regarded as characteristic, for few are found in the other quarters of the ancient world, and their occurrence in our British American possessions exhibits one of the

* Introduction to Entomology, vol. i. p. 185.

many features of resemblance between the entomology of those countries and that of the temperate parts of Europe. Britain alone produces above twenty species of Donacia, and about fifty different kinds in all are now recorded by naturalists. *D. femoralis*, *affinis*, and *emarginata*, were taken by Dr Macculloch in Nova Scotia,—*D. proxima* and *cuprea* are Canadian species,—and *D. flavipes* and *hirticollis* have been found as far north as latitude 65°.

The beautiful and extensive genus *Coccinella* belongs to the aphidiphagous or aphis-eating group. These insects, familiarly known under the name of *lady-birds*, are distinguishable from the preceding genera of Chrysomela, &c. by the amount of the articulations of the tarsi, which never exceed three. The under surface of the body is very flat, the elytra convex, so that the general form is hemispherical. The larvæ feed on Aphides, and are extremely useful in the destruction of these gregarious insects, the superabundance of which so greatly deteriorates so many vegetable substances. Although such are the prevailing if not universal habits of the numerous species observed by European naturalists, it appears that Bosc, in describing the *C. borealis* of America, mentions that it is extremely injurious to the leaves of the melon plantations, and other species have been alleged to injure the crops of lucerne and cinque-foils. Dejean's collection contains above 100 species, distributed over almost every quarter of the known world, and several species occur in Canada and still more northern countries. Such are *C. episcopalis*, *tredecim-punctata*, *tridens*, *quinque-signata*, *quinque-notata*, *tricuspis*, and *incarnata*.

Of the great order ORTHOPTERA, including locusts, grashoppers, &c. we have scarcely any knowledge, so far as concerns the British American species. The order itself is much less numerous than that with which we have been hitherto engaged, and prevails chiefly in the warmer climates of the south. Thus, while Great Britain produces nearly 4000 beetles or Coleoptera, our indige-

nous lists scarcely number more than sixty orthopterous species. The few American kinds taken by our exploring party, such as *Locusta leucostoma* and *verruculata*, and *Acrydium granulatum*, occurred immediately to the north of our Canadian territories.

Of the order NEUROPTERA, the only North American species reported on by Mr Kirby are a small dragon-fly, *Agrion puella*, well known in Britain, and *Perla bicaudata*, likewise a British insect, which in America reaches as far northwards as latitude 68°. The neuroptera in general are insects of an elegant deportment. They fly with great lightness, and are frequently adorned by a variety of colours. The wings are usually naked and transparent, and pervaded by a delicate network or reticulation. But in the genus *Phryganea*, Linn. the wings are veined in a peculiar manner without reticulation, and in some degree resembling those of Lepidoptera, and being moreover covered by short hairs, the species have been removed from the other Neuroptera under the ordinal title of *Trichoptera*.* Of these Phryganidæ *Limnephilus nebulosus* and *femoralis* occur in high latitudes in North America.†

The order HYMENOPTERA is more numerous in these northern countries than either of the two preceding. As it contains the wasps, bees, ants, and ichneumons, it is of more direct utility to man than most others, in as far as it yields us those two invaluable insect products,—wax and honey. We shall here notice a few of the species taken by our expedition, although the majority of these occurred in countries considerably to the north of Canada.

A single specimen of a curious British insect, *Cimbex femorata*, was taken in latitude 65° ; the larvæ of some of these, it is said, will occasionally spout out a greenish liquid at their tormenters to the distance of a foot. A new species of *Trichiosoma*, *T. triangulum*, occurs in

* Linn. Trans. xi. 87, note.
† Fauna Boreali-Americana, iv. 253.

Canada, as well as further north, where we likewise find *T. lucorum* (a British insect) of Dr Leach. Mr Stephens some years ago found in the neighbourhood of London a fine insect which he named *Sirex bizonatus*. It has since been taken in British America, and may be inferred to have been imported into Britain in the larva state concealed in the timber of Canadian pines. Another large insect of the same genus, *S. juvencus*, which extends into the north of Europe, was taken in America in latitude 65°. These creatures usually inhabit the pine forests of cold and rather mountainous countries, and fly swiftly with a sonorous buzzing sound like that of an humble-bee. Specimens of *Phœnus jaculator* were captured in the latitude just named.

Of the American ants we shall merely name *Formica fusca* (the *small black ant* of Gould), as a species with which we are also well acquainted in Europe.

Although no true bee occurs in the Western World (that is, none belonging to the restricted genus which contains our garden or honey bee), except by importation, we find there our common wasp, *Vespa vulgaris*, or an insect so greatly resembling it as to be regarded by Mr Kirby as a mere variety. Three other species, *V. borealis*, *marginata*, and *maculata*, spread as far north as latitude 65°. Among the American *Andrenidæ* we also find, as might be expected, several of our British species, such as *Halictus rubicundus* and *Andrena varians*, Steph.

Of the Nomadian bees belonging to the group called *Cuculinæ* (so named because, cuckoo-like, they deposit their eggs in the nests of other bees) we find *Nomada Americana* in the countries to the north of Canada. The genus occurs also in Asia and Africa, although the majority of the species are at least characteristic of Europe, if not peculiar to it. Our own impression was that several occurred in the New World; but Mr Kirby informs us that the species just named is the only one he ever saw from that continent.

Of the humble-bees, however (genus *Bombus*), a great

number of species are found in the northern parts of America. A wood-frequenting kind, *B. sylvicola*, makes a near approach to the British *B. sylvarum*, while a ground-species, *B. terricola*, is closely allied to our well-known *B. terrestris*, but the whole upper surface of the abdomen is clothed with yellow hairs, excepting the first segment and a nearly terminal band, which are black. The wings are embrowned. A British species, *B. Derhamellus*, is taken as far north as latitude 65°. There are few associations of our childhood, it may be confidently remarked, more deep and enduring than those connected with the pursuit and capture of the beautiful insects of this genus, many of which are remarkable for their size, and the rich contrast which they exhibit of velvet black and crimson, with bars of brilliant yellow. This splendid attire, however, saves them not from being rudely handled; and who remembers not the day when a *bink*, or little box of moistened clay, was made to contain as many captives in proportion to its size as the Black Hole of Calcutta? The *regime* of the community of humble-bees differs from that of the garden or honey bee in so far as it is dissolved on the approach of winter, resembling in this feature the economy of wasps. It consists of *males*, distinguished by the smallness of their size, their feebler heads, their narrower mandibles terminated by two dentations, and their frequent difference of colour;—of *females*, which are larger than the other individuals, and have spoon-shaped mandibles;—and of *workers*, of which the mandibles are likewise spoon-shaped, and the size intermediate between the two preceding kinds. Of these workers Réaumur was the first to distinguish two varieties,—one comparatively large and strong, the other smaller, but more lively and active. This singular fact has been since verified by Huber the younger. According to the observations of the Genevese observer, several of the workers born in spring couple during the month of June with males sprung from a common mother, and soon afterwards

deposit eggs, from which, however, males alone are produced. These latter couple with the females which are born towards the end of the season, and which, continuing through the winter in a pregnant state, become each the founder of a colony in spring. In the meantime all the others perish, without excepting even the smaller females. The workers, then, though in common with those of the garden-bee often called neuters, are in fact females, but of smaller size than the more regular mothers, and with the productive faculty imperfectly developed. These observations have been made in reference to the British and other European kinds, but they also apply, we doubt not, to the identical or analogous species of the Western World. No sooner has the genial influence of spring penetrated the mossy cells where these more ponderous matrons have enjoyed their winter sleep, than they rouse themselves from their repose, and wing their dubious flight in search of the first opening crocus or other garden flower; or if remote from man, and destined to boom amid wild uplands or other pastoral wastes, the flowering saughs (*Salix caprea*), which so often skirt the edges of our mountain-streams, and beautify the crystal waters by the reflection of their golden blossoms, afford them a sufficing food. What lover of nature knows not how, even amid steril solitudes, a few bright sunny days call into life and beauty many fragrant flowers, not long unvisited by these glad labourers, who erelong settle in some fit abode, and lay the foundations of a future city.

The suctorial or haustellated orders in Entomology (by some regarded as a separate insect class) differ from all the preceding in the structure of the mouth,—having neither mandibles nor maxillæ, properly so called. They live by suction, and are provided with a tubular articulated rostrum, cylindrical or conical, curved inferiorly, or directing itself along the breast when in a state of repose, but in most cases capable of extension for active service. The different parts of

which this sucker is composed no doubt represent the mandibles and maxillæ of the masticating orders.*

Of the hemipterous genus *Pentatoma*, or wood-bugs, several species were taken by our expedition in their journey from New York to Cumberland House. *P. carnifex* is found in Nova Scotia. Almost all these insects exhale a disagreeable and penetrating odour, which continues to emanate for some time from whatever substance they have touched. A pleasant narrative is given by De Geer regarding a species of this genus, several specimens of which he found on a birch tree, each followed by a little troop of thirty or forty young ones, which seemed to accompany their mother as chickens do a hen, and were watched over by their parents with fond solicitude. Now this is a very anomalous fact in the history of insects, which are scarcely ever personally regardful of their offspring, although they instinctively deposit their eggs in situations admirably adapted for the preservation and support of the future larvæ. Specimens of the genera *Edessa*, *Miris*, and *Aradus*, were taken in the course of Dr Richardson's journey to Cumberland House, and as far north as lat. 65°.

The genus *Gerris* consists of insects of an elongated form, and usually of a blackish colour, which are met with on the surface of still waters, on which they seem to advance by starts. They are widely distributed over the earth's surface, and even identical species possess a very extended range. Thus our British *G. rufo-scutellata* and *lacustris* are both common in North America, and the same may be said of *Corixa striata* of Dr Leach. The *Notonectæ*, properly so called, are distinguished by the singular habit of swimming upon their backs, with their bodies somewhat inclined, their heads being elevated during their upward progress, and the contrary while they either rest suspended at the surface, or descend towards the bottom of the pool. They are extremely fierce and predaceous,—in absence of other food

* See Savigny's Mém. sur les Animaux sans Vertèb.

cruelly seizing upon and devouring their own young. We are not aware that the British American species are identical with those of Europe, at least the only specimen taken by our expedition is a new insect, described by Mr Kirby under the name of *N. insulata*.

The genus *Cercopis*, of which the larvæ usually inhabit a white foam frequent on the stalks of various plants, and known by the familiar name of *frog-spittle*, furnishes our only northern example of the homopterous section of the hemipterous order,—*C. marginella* of Fabricius having been taken at Carlton House in spring, as well as in the districts nearer Hudson's Bay.

We now arrive at the splendid and universally admired order LEPIDOPTERA, which contains the butterflies, sphinges, and moths. These insects are distinguished by four membranous veined wings, covered by innumerable close-set scales, which frequently exhibit the most brilliant colours.* We need not, however, dilate upon any thing so well known as the general aspect and character of these richly adorned creatures.

The first section, called *Diurna*, contains the butterflies, properly so called. They are never seen on the wing except during daylight, and in a state of repose they usually hold their wings erect. Their antennæ are almost always terminated by a club or knob. From the earliest periods of natural history, the elegant forms and exquisite colours of these insects have never failed to excite the zeal and admiration of collectors. They occur in all quarters of the world—from the frozen shores of Greenland and Spitzbergen, to high southern latitudes—but the tropical regions of Asia and America

* The following table may serve to illustrate the difference between the most laboriously elaborate work of art, and the most ordinary productions of nature. The numerals represent the amount of tessellæ, or distinct pieces, in every square inch :

The Sussex pavement contains	11
A modern mosaic picture	870
The wing of a butterfly expanded	180,736
The same in the chrysalis state	931,808

are the most productive of large and splendidly coloured varieties. Nevertheless the temperate countries both of the Old World and the New are productive of many species of great beauty,—a few of which, from "the far west," we shall here briefly notice. The occurrence of such as are identical with those of Europe is not the least interesting feature observable among the Lepidoptera of North America.

The first Canadian species we have to notice is *Papilio Turnus*, a large and beautiful butterfly, which has what may be called its centre of dominion within more tropical climates, although it continues to be met with for several degrees to the north of the great lakes. Our European *Colias edusa* likewise occurs in British America,* and the Canadian territory is adorned by *Argynnis Cybele*, *Myrina*, and *Aphrodite*. Our famous Camberwell beauty, *Vanessa Antiopa*, has been taken both in Canada and Nova Scotia. In Britain the eggs of this species are supposed to lie dormant (like the seeds of many plants) for several seasons, at least Mr Haworth conjectured this to be the reason of its showing itself in the perfect state at rare and distant intervals. Until a comparatively recent period it had not been seen in England for nearly forty years. That it is of a hardy nature, however, may be inferred, not only from its northerly position in America, but from the fact of Mr Samouelle having, in the spring of 1820, captured an English specimen which must have survived the rigour of the preceding winter. Our beautiful *Vanessa Atalanta* is generally distributed over North America.

One of the most remarkable examples of a widely or rather universally extended distribution is presented by an insect of another genus, *Cynthia cardui*, commonly called the painted lady. This butterfly is found over great portions of Europe, Asia, Africa, and America, and

* According to Mr Burchell, this insect also inhabits the south of Africa, and Mr Swainson has seen examples from the Nepaul Mountains.

is as familiarly known in the central islands of the vast Pacific Ocean, as among the flower-gardens of England. Yet how frail and feeble are its gaudy wings, and how vainly would they now serve as the means of transport to those "sea-girt isles" from any of the greater continents of the earth! We agree with Humboldt that the migration and distribution of organic bodies can no more be solved as problems in natural science than the mystery of their original creation; and that the task of the philosopher is fulfilled "when he has indicated the laws in accordance with which Nature has distributed the forms of animal and vegetable life."* We have received the interesting insect last named from Nova Scotia, and a nearly related species, *C. Hunteri*, extends into Canada.

Of the extensive genus *Hipparchia*, a new Canadian species, taken by Dr Bigsby, is described by Mr Kirby under the name of *H. nephele*, and several specimens have been taken considerably further north (at Cumberland House, lat. 54°) of another previously unknown lepidopterous insect, *H. discoidalis*. Of the beautiful *Lycænidæ*, *Thecla Augustus*, *Lycæna dorcas*, and *Polyommatus Lucia*, were likewise taken in lat. 54°.†

The second principal division of the order Lepidoptera is called *Crepuscularia*. We would naturally infer from the name, that the species are observed chiefly during the morning and evening twilight, yet many may be seen darting from flower to flower during the prevalence of bright sunshine. The principal contents of this group belong to the Linnæan genus *Sphinx*, so denominated, we believe, on account of the peculiar attitude assumed by several of their caterpillars, which at times bear some resemblance to that fabled monster of antiquity. The perfect insects fly with great velocity, sometimes producing a humming noise, occasioned, it is probable, by the rapid vibrations of their

* Personal Narrative, vol. iii. p. 496.

† For these, and other newly discovered species, see Fauna Boreali-Americana, part iv. p. 298.

wings. Their trunk, which is usually very distinct, is in a few greatly elongated, and, instead of *settling* upon flowers like bees and most other insects, they are generally observed merely to hover over or in front of the gorgeous petals, and to extend their long tubular suckers towards the nectaries. Of the British American species, we shall here name *Smerinthus Cerisyi*, a new insect, which Mr Kirby regards as the American representative of our *S. ocellatus*. *Deilephila intermedia* is another of the western sphingidæ, which seems to take its place as it were between *D. Euphorbiæ* and *Galii* of Europe. Of the smaller Zygænidæ, *Alypia Maccullochii* may be mentioned as a previously undescribed species, which occurs both in Canada and Nova Scotia. *Sesia rufi-caudis* of Kirby is likewise a Canadian insect.

The great group called *Nocturna* is composed of a vast assemblage of species, known under the familiar name of moths. It corresponds to the old and undivided genus Phalæna of Linnæus. The wings, with a few exceptions, are *bridled* in repose, by means either of a bundle of setæ, or a strong bristle, which, projecting from the anterior margin of the lower wings, is received into a peculiar process of the under surface of the upper pair. The antennæ are setaceous, or become gradually narrower towards the extremity. They are frequently feathered or pectinated, especially in the males, in which sex likewise they are usually of more ample size. The females of a few species have no wings, or but the merest rudiments of those parts. The chrysalids are of a rounded form, without angular points.

These insects, as their family name implies, are but seldom seen upon the wing till after sunset, and many of them continue their flight throughout the mild and dewy nights of summer until the morning twilight, which, exposing their defenceless forms to many and cruel foes, warns them to seek the shelter of their leafy homes. By the sides of still waters, and the fringed margins of sombre woods, by dingle and bushy dell, or among the rocky peaks of gray and ghostlike crags, we

have often watched their airy evolutions throughout those solemn hours in which we so usually steep our senses in oblivion,—but during which millions of happy creatures revel in undisturbed delight, fulfilling their glad vocation, and if not "hymning their Maker's praise" audibly with choral songs, yet not the less exhibiting their enjoyment of that pervading goodness which is over all his works. What a stream of happy life is ever flowing on by day and night, in spite of all that darkens the primeval brightness of this dim spot "which men call earth!" What a countless throng of rejoicing creatures, unoppressed by either sin or sorrow, are ever bursting into existence, peopling the midnight air and lonely moorish waters, glittering amid burning deserts, or holding glad communion under the leafy canopy of the umbrageous woods! What innumerable and infinitely varied forms of insect-life are destined to spring up and perish, for ever unseen by human eye, yet nevertheless performing an essential part in the gracious scheme of God's omnipotence,—that great and solemn mystery—creation! "O Lord, how *manifold* are thy works; in wisdom hast thou made them all."

During the brightness of the day-season, the nocturnal Lepidoptera conceal themselves in tangled vegetation, on the shady side of walls and other buildings, beneath the cover of large o'erhanging leaves, or in the crevices of the gnarled bark of ancient forest-trees, and other sombre places. So astounded indeed are the greater number by the "garish eye of day," that when discovered by a sharp-sighted and sun-enjoying entomologist, they may be taken prisoner without an effort to escape. A few, however, present exceptions to this general rule, the males of *Bombyx zigzag*, for example, flying fearlessly throughout the entire day, in spite of the brightest beams of "glorious Apollo," and searching so intently for their fair but sluggish females, as not seldom to sacrifice their lives to whatever wayward wing and horny beak may dart upon them, "spoiling the sense of that nepenthe—love."

The nocturnal species which we have here to indicate as inhabitants of British America are extremely few. Two new species of *Callimorpha*, *C. Partheniæ* and *virguncula*, are described by Mr Kirby. The latter called "the Little Maiden," has the primary wings black with pale pinkish rivulets, forming rays at the apex; the secondaries are yellow spotted with black, and the thorax is yellow with five black spots. The expanded wings measure an inch and a half. It was taken in Canada by Dr Bigsby. Another Canadian insect, likewise new to naturalists, is the red striped Lithosia, *L. miniata*. It is of the colour of red lead, with three stripes upon the primary wings, the apex of the secondary pair, and the centre part of the abdomen slate-coloured. A large *Ctenucha* (*Ct. Latreillii*, Kirby) occurs both in Canada and Nova Scotia, and the former country produces the rectangular noctua (*Plusia rectangula*, K.), of which the primary wings are ash-coloured, divided with black, and marked by a rectangular subramose silvery spot of snowy whiteness, forming, when the wings are made to approach each other, a quadrangular area "resembling a picture in a silver frame." A well-known British species, *Plusia gamma*, distinguished by a pallid silvery signature in the disk of the primary wings resembling the Greek letter gamma, or the Roman y, has been taken in Canada, while Nova Scotia produces another species as yet unknown in the old country, called *Plusia falcifera*, or the sickle-bearing Plusia. A very protean species which we often see in Britain, *P. iota*, the *V. d'or* of the French, occurs over a wide extent of British America. In the Nova Scotia specimens, Mr Kirby informs us the discoidal spots are silvery, while in those from Canada their lustre is rather of a golden hue.

We have next to offer a few brief notices regarding the order DIPTERA, or two-winged insects, of which the common house-fly affords so familiar an example. Many tribes of this extensive order occasion us frequent annoyance, not only by sucking our blood when we by no

means desire the exercise of such phlebotomy, but also by laying their numerous eggs on the living bodies of many domestic animals, and on whatever fleshy viands, especially if uncooked and somewhat tainted, they can attain to. In summer more particularly, when the process of corruption is the speediest, these insects are in their prime of health and vigour, and buzz about incessantly, ever on the watch at pantry-doors or windows, or wherever they may hope (forewarned by emanation) for a proper nidus for their future young. Yet notwithstanding this disgusting interference with our property, they may be regarded on the whole as serviceable when we indulge in a more enlarged view of their depredations. Their gluttonous larvæ rapidly consume all animal matters in a state of putridity, which, if left at large, would affect the air we breathe with many pestilential odours.

The first genus we shall notice is that called *Culex*, the species of which are so well known as gnats and mosquitoes. They are extremely troublesome towards evening, especially in the vicinity of moist or marshy places. They are greedy of blood, and in their insidious search for food they persecute both man and beast, not only sucking our life-stream, but instilling a poison which, though feeble in effect from its extreme minuteness, yet often produces pain and inflammation. Although abundant in Italy and all the warmer countries of the earth, gnats are nowhere more frequent than amid the barren wastes of North America. The females, who it is alleged alone are blood-suckers, deposit their eggs in water to the amount of many hundreds, and the larvæ are consequently very plentiful in all stagnant pools in spring and summer, where they may be seen when undisturbed suspended from the surface with their heads downwards. At this time they breathe through the caudal extremity, but in the nympha state, during which they are still aquatic, the respiratory organs are placed upon the thorax. On assuming the perfect form, the thin exuvia of the nymph serves as a

support, by means of which the imago or completed fly sustains itself for a time upon the surface of the glittering waters, being for it

> "A shell of ample size, and light
> As the pearly car of Amphitrite
> That sportive dolphins drew."

A North American mosquito (and there are probably many others) is described by Mr Kirby under the name of *Culex punctor*. It is a small species, measuring little more than a fourth of an inch in length, the general colour black, with the legs and nervures of the wings testaceous.

Of the genus *Tipula* (the species are known in England by the name of *Harry Long-legs*, while in Scotland they rejoice in that of *Jenny Nettles*), we shall mention of American kinds only *T. pratorum*, of which the head and trunk are slate-coloured, the prothorax has four brown stripes, the abdomen is yellow, with three longitudinal lines, and the apex brown, the legs and antennæ are testaceous at the base, and the wings clouded.

The genus *Empis*, of which we have nearly thirty species in Britain, is likewise well known in North America. Their early history has not been clearly determined, but in the perfect state they seize upon other flies and suck them to death. *E. luctuosa* and *geniculosa* were taken in countries to the north of Canada, where also a well-known British insect belonging to another genus,—we mean *Bombylius major*,—was not unfrequent. A smaller species of that genus (*B. pygmæus*, Fab.) is also found in the same country. Of the genus *Tabanus* Mr Kirby names *T. affinis* and *zonalis*, both new species, as natives of the New World, while the kindred genus *Chrysops*, so called from the beautiful brilliancy of its golden-coloured eyes, is there represented by *Ch. sepulchralis*,—a dismal name for an insect which continually bears along with it two lamps of living light.

Of the *Syrphidæ*, a common Scotch insect, *Scæva ribesii*, is known in British America; and of the *Mus-*

cidæ Mr Kirby describes two new species, *M. cadaverum* and *mortisequa*. The latter seems to be the representative of our *Musca vomitoria*.

That singular and anomalous British insect *Hippobosca equina* has been captured in our American possessions; and, lastly, an enormous flea, named *Pulex gigas*, was taken in our northern territories, but we are not informed by whom.

BOTANY.

CHAPTER VI.

Some Account of the most Interesting Plants belonging to British America.

Plants deserving particular Notice in the natural Orders—Ranunculaceæ—Podophylleæ—Nymphæaceæ—Magnoliaceæ—Umbelliferæ—Araliaceæ—Grossulaceæ—Vitaceæ—Sarraceniaceæ—Cornaceæ—Aceraceæ—Rosaceæ—Leguminosæ—Betulaceæ—Juglandaceæ—Platanaceæ—Ericaceæ—Vacciniaceæ—Compositæ—Coniferæ—Orchidaceæ.

As it would be scarcely possible in any general account of the flora of the British Possessions in North America to separate the United States on the one hand, and the Arctic Regions on the other, we shall, after a few brief observations, proceed at once to notice under their respective orders those plants which are of prominent interest. One of the most striking features in the vegetation of the United States and of Canada, as far as they can be conjointly considered, is the number of species belonging to the genera *Solidago*, *Aster*, *Quercus* (oak), and *Pinus* (fir). It is also distinguished for the many plants contained in the orders or natural families, *Grossulaceæ*, *Onagraceæ*, *Hypericaceæ*, *Aceraceæ*, *Betulaceæ*, *Juglandaceæ*, and *Vacciniaceæ;* and for the presence of the peculiar families, *Podophylleæ*, *Sarraceniaceæ*, and *Hydrophyllaceæ*. There is, on the contrary, the climate being considered, a remarkable paucity of *Cruciferæ* and *Umbelliferæ*, and, what is most extraordinary, a total absence of the genus *Erica* (heath), which covers so many thousands of acres in corresponding latitudes in Europe.

RANUNCULACEÆ.

This family belongs chiefly to Europe and North America, one-fifth of the whole being found in the former, one-seventh in the latter. In the British Possessions we find many genera with which we are familiar, such as *Clematis*, *Thalictrum*. *Anemone*, *Hepatica*, *Adonis*, and *Ranunculus*. There are in fact only two with which the European botanist is unacquainted, *Hydrastis* and *Coptis*. Of all the species of *Clematis*, which are found in the United States, *C. Virginiana* and *C. verticillaris* alone pass the northern boundary. The first has been long cultivated in England as a climber, and esteemed for the delightful fragrance of its blossoms. Nine species of the beautiful genus *Anemone* have been collected in Canada or to the northward. The young buds of one kind serve as food for the marmots. *A. nemorosa*, the graceful companion of the hyacinth and primrose in our own copses, is likewise a native of Canada, and was even found by Drummond and Douglas on both sides of the Rocky Mountains. *Hepatica triloba*, the hepatica of our gardens, a European plant, whose blue, white, or pink flowers expand along with the crocus and the snowdrop, is a frequent ornament of the Canadian woods, flourishing also in the secluded valleys on the eastern declivity of the Rocky Mountain ridge, as far north as latitude 55°. It is the snow-flower of the Americans. The yellow-root (*Hydrastis Canadensis*), resembling in its habit some of the herbaceous brambles, yields a fine yellow dye. About twenty kinds of *Ranunculus* are known, several of them being identical with common European species; especially *R. sceleratus*, celebrated with others of the genus for a highly acrid property. Employed as an epispastic it raises a blister in an hour and a half, and is used by beggars in this country for the purpose of forming artificial ulcers.

PODOPHYLLEÆ.

This is an exclusively American order. The May-apple

(*Podophyllam peltatum*) grows in large patches in moist situations, and is an herbaceous plant with a single peltate and palmate leaf; the fruit is a green berry, called May-apple by the early settlers. The root is said by Barton to be one of the safest and most active cathartics known.

NYMPHÆACEÆ.

Few examples of this order occur in Canada: none in fact but *Nymphæa odorata*, the doubtful *N. minor*, *Nuphar lutea*, *kalmiana*, and *advena*. *Nymphæa odorata* is fragrant, as its name implies, and takes the place of the white water-lily of Europe, cradling its beautiful flowers on the bosom of small lakes and slow streams. It is abundant in the neighbourhood of Quebec, and Dr Richardson found it in Upper Canada. The seeds of the plants belonging to this order being farinaceous, are in India and other countries roasted and eaten. Lindley mentions, on the authority of M. Fee, that the stems of *Nymphæa alba* are better than oak-galls for dyeing gray: it is said that they have been also employed for tanning leather, and even that a very tolerable beer has been prepared from them. All the species of *Nuphar* are yellow, and are known by the name of yellow water-lilies. It is remarkable that no representative of this family has hitherto been discovered in South America.

MAGNOLIACEÆ.

The only member of this splendid family which reaches the Canadian boundary is the tulip-tree (*Liriodendron tulipifera*), so named from the similarity which the flowers bear to a tulip. It is a large and ornamental forest-tree, growing to the height of seventy or eighty feet, with a trunk four feet or more in diameter. The foliage is of a pale green colour and very singular, the leaves being angular and truncated or cut off, as it were, at the extremity. Two varieties are described, commonly known in America by the names of white and yellow poplars. The wood of the former is of good quality for

building purposes, but that of the latter soft and brittle, and chiefly used by the turner. The bark of the root is said to furnish, in common with that of *Magnolia glauca*, a tonic medicine of great value.

UMBELLIFERÆ.

Of the forty-six species recorded in Hooker's Flora Boreali-Americana, only twenty-six can be held to come within the limits of British America. This is remarkable, for the order is an extensive one, and chiefly distributed in the higher parts of the northern hemisphere. Europe is indeed the metropolis of the order; but many species probably remain to be discovered in America. In the large island of Newfoundland we are acquainted with only four of these plants. The properties of the *Umbelliferæ* are not unknown to the Indians: some are employed medicinally, and others as food. The root of *Seseli triternatum* is said by Pursh to be, when roasted, one of the most agreeable vegetables. The roots and young stems of *Heracleum lanatum* are eaten by the Chenook Indians in the north-western parts; and according to Dr Richardson, the Canadian voyageurs, and the Cree Indians, who call the plant *Pehpoon-ahtic* (flute-stem), also use the young stems as a pot-herb. Tribes living on the banks of the Columbia boil the tops of *Ferula Nuttallii*, as we do celery, in their soups.

ARALIACEÆ.

The only plant in this small order which calls for particular notice is the gin-seng (*Panax quinquefolium*). The Chinese word gin-seng, which signifies the figure or representation of a man, seems to have been applied to this vegetable, because the root occasionally divides in such a manner as to bear a fanciful resemblance to the human form. This species of *Panax* is herbaceous, scarcely a foot and a half in height, and towards the upper part of the stem arise three quinate-digitate leaves, from the centre of which springs the flower-stalk. The root is fusiform and fleshy, and is the part

chiefly valued. We are informed, that among the Chinese many volumes have been written upon its virtues; and that besides the name already mentioned, it is known by several others expressive of the high estimation in which it is universally held throughout the celestial empire; two of these appellations are, *The pure spirit of the earth*, and *The plant that gives immortality*. It is considered almost in the light of a general specific, but from its costly price is beyond the reach of the poor. Mountainous woods in Tartary are mentioned as the place where it is produced in the greatest abundance. In 1709, the emperor ordered an army of ten thousand natives to collect all the gin-seng they could find; and each person was to give him two ounces of the best, while for the remainder payment was to be made in silver, weight for weight. It was in the same year that Father Jartoux, a Jesuit missionary in China, prepared a figure and accurate description of the plant, in which he bears testimony to the beneficial effects of the root. He tried it in many instances himself, especially when exhausted by fatigue, and always with the same result. His pulse was increased, his appetite improved, and his whole frame invigorated. According to Osbeck, the inhabitants take it frequently in their tea or soup; and Jartoux adds, that the Tartars use the leaves even as a substitute for tea itself, and that he himself preferred them decidedly for that purpose. Judging from the accounts before us, we should say that the Chinese were extravagant in their ideas of the virtues of this herb; but that it is undoubtedly a cordial stimulant, to be compared perhaps in some degree with the aromatic root of *Meum Athamanticum*, so much esteemed by the Scottish Highlanders. It has nevertheless disappeared from our materia medica. Early in the last century, gin-seng was discovered in North America, where it has a very extensive range. The American plant seems in all respects identical with the one indigenous to China, and the prepared roots were at one time exported to that country in large quantities, and purchased by the inhabit-

ants as the genuine drug. This branch of commerce, owing, it is believed, to some mismanagement in the mode of collecting and preparing the root, gradually fell off, and at last ceased to exist. A species of gin-seng very much resembling the one which we have been describing, and named by Wallich *Panax pseudo-ginseng*, is found on the Sheopore mountains in Nepaul.

GROSSULACEÆ.

The genus *Ribes* containing the gooseberry and the currant,—two of the most agreeable and wholesome fruits of temperate regions, are particularly abundant in North America. Twenty-two species are described in Sir W. J. Hooker's Flora, of which ten come within our prescribed limits. *Ribes oxycanthoides*, found throughout Canada, produces a red or green fruit, which Mr Drummond considers, in regard to its flavour, equal to the common gooseberry. *R. rubrum*, our common red currant, is frequent, and extends even to the mouth of the Mackenzie River. *R. prostratum*, likewise abounding in Canada, has rather large red fruit; but we have no account of its qualities. Some of the most interesting American species of this genus occur on the north-west coast, or among the Rocky Mountains; and although it is not our province at this time to consider the vegetation of those regions, we trust that a passing notice of their productions will not be unacceptable, when it contributes to illustrate our subject. One of the most remarkable plants of the genus *Ribes*, *R. stamineum*, was discovered in North California by the venerable Menzies; but was not introduced into our gardens, where it is known by the name of fuchsia-flowered gooseberry, before 1829. The petals are included within the fine red calyx, which, with the singularly exserted stamens, give the plant its showy appearance. *R. Menziesii*, another gooseberry from the same country, is conspicuous for its large and beautiful flowers; while *R. bracteosum*, a currant discovered by Dr Scoular at the confluence of the Columbia with the ocean, is equally distinguished by

leaves of the same form, and nearly as large as those of *Acer pseudo-platanus* (greater maple). *R. aureum*, brought by Lewis and Clarke from the falls of the Columbia, is now, on account of its rich yellow blossoms, an ornament of our gardens; and its yellow (rarely black) fruit is said by the traveller Douglas to be of exquisite flavour. Above all currants, however, the red-flowered one (*R. sanguineum*) must take precedence as an ornamental shrub. Originally observed by Menzies on the north-west coast, it was one of the many interesting novelties introduced to this country by Douglas, where it has become too familiar to require description. The fruit, which is frequently produced, is good for nothing; but the copious clusters of beautiful flowers, which from their early appearance are doubly attractive, render it a universal favourite. It grows freely from cuttings, and has already spread from the regal parterre to the cottage-garden.

VITACEÆ.

America possesses five or six species of vine, three of which extend to Canada. The fox-grape (*Vitis Labrusca*) climbs the highest trees, and produces a dark purple fruit; the berries are large in the wild state, and possess, according to Pursh, a disagreeable fox-like smell. When cultivated, however, it is as good, on the authority of Dr Torrey, as many of the forms of *V. vinifera;* and one of the varieties of it is well known as the exceedingly prolific Isabella grape. The second Canadian species is the chicken-grape, or winter-grape (*V. vulpina*), which, as well as the preceding, enjoys a range from Canada to Florida. It climbs up trees, and spreads over the hedges, producing green or amber-coloured, small, very tart berries, which are besides extremely late in coming to maturity. The third species is *V. riparia*, which does not appear to extend northward beyond the southern extremity of Lake Winnipeg, in latitude 52°. The flowers are said by Pursh to have an exquisitely fine smell, resembling that of mignonette; but no account is given of the fruit. The same author observes, that female

plants are very seldom found north of the Potomac River, though the male ones extend very far beyond it.

SARRACENIACEÆ.

This is one of the most remarkable families of plants in the vegetable kingdom,—composed of a single genus, and that genus confined to the bogs and swamps of North America. It has been supposed to be most nearly allied to *Papaveraceæ* and *Nymphæaceæ*; but Professor Lindley very acutely suggests that it is also "akin to that order, whatever it may be, which shall finally comprehend *Dionæa*," another most curious American plant. In regard to the foliage alone, he observes, that if *Dionæa* (Venus' fly-trap) is compared with *Sarracenia*, "we shall find that the pitcher of the latter is represented by the dilated footstalk of the former, which only requires its margins to cohere to be identical with it, and that the lid of the pitcher of the latter is analogous to the irritable lamina of the former." There are four species of *Sarracenia*, of which *S. purpurea* is the only one found in the British Possessions. The singular shape of the flower in this genus has acquired for it the name of the side-saddle flower; but the leaves are still more remarkable. These form inflated tubes, in some species a foot or more in length, surmounted by a sort of helmet-shaped lid, which is more or less inclined over the orifice. Within is always found a quantity of water; and it is alleged, that in dry weather birds resort to these vegetable reservoirs in order to quench their thirst. On the other hand, thousands of insects discover them only to die. Attracted partly by the moisture, partly perhaps by the effluvia exhaled by the dead bodies of former victims, they enter the fatal tube, and the inverted hairs with which the upper part is beset, prevent all hope of escape. A brief struggle ensues, and the unfortunate captives, exhausted with their efforts, sink into the dark and still flood. The remarkable direction of the hairs, considered along with the constant presence of fluid, certainly leads to the con-

clusion that the destruction of insects is in some mysterious manner connected with the economy of these extraordinary plants; and this supposition is strengthened by the fact, that they cannot be in want of moisture for the ordinary purposes of vegetation, their place of growth being always bogs and swamps. Another circumstance deserving of being mentioned in this place is, that the leaves of the genus *Dionæa*, which Lindley considers to be allied to *Sarracenia*, are also furnished with a different and still more wonderful apparatus for entrapping those little creatures.

CORNACEÆ.

There are ten species of *Cornus* (dogwood) produced in British America, which differ exceedingly in habit. *C. Canadensis* is closely allied to the European *C. Suecica*, and like it is herbaceous, and only a few inches high; whereas *C. florida* is a tree from twenty to thirty feet in length, with a trunk six or eight inches in diameter. The flowers are large and handsome; and it is said by Barton to afford the best substitute for Peruvian bark in intermittent fevers hitherto found in North America. The wood is exceedingly hard and of very fine texture; and the Indians extract a scarlet dye from the fibrous roots. Few genera exhibit such a variety of colours in the fruit. In some, the drupes or berries are white, in others fine red or brown, in others again bright blue or purple. Professor Lindley, in his observations on the properties of the order, quaintly observes, that *Cornus mascula* and the genus *Benthamia* yield a fruit which is eatable, but not worth eating. We are not aware that the berries of any of the American dogwoods have been used as food.

CRUCIFERÆ.

There are no plants here which require to be particularly noticed; but it is interesting, and of some importance, to observe, with respect to their geographical distribution, that of twenty-nine genera described in Hooker's Flora Boreali-Americana, only eighteen are

found in the English Possessions: and some of these are represented by scarcely more than a solitary species. Even among the twenty-five kinds of *Draba*, there are only three or four in the whole of British America, so far as our information extends. Of the hundred and nine *species* of *cruciferæ*, recorded in the Flora above mentioned, sixty-nine exist beyond the limits assigned to us. The entire order contains nearly a thousand species, and it is deserving of remark, that while in Europe they abound for the most part in the temperate zone, in America they predominate as they pass from the temperate to the frigid zone; or to an equivalent position on the Rocky Mountains.

ACERACEÆ.

North America is one of the most prolific stations of this small order. Some of the species of *Acer* (maple) form large, ornamental, and valuable trees. *A. macrophyllum*, discovered on the north-west coast by Menzies, reaches ninety feet in height and sixteen feet in the circumference of the trunk. *A. Pennsylvanicum*, called the striped maple, from the white lines on the bark, is a favourite food for horses and cattle, which browse on the young shoots towards the end of winter. The moose-deer also feed upon them in severe seasons, and the tree has thence acquired the name of moose-wood. The sap of several species of maple abounds in saccharine matter, and yields a large quantity of sugar. The kinds in most esteem for this purpose are *A. dasycarpum* (white or soft maple), *A. nigrum* (black sugar-maple), and *A. saccharinum* (the sugar-maple); the last two yielding the greatest quantity of sugar. The value of this article was early known to the American settlers; and even at this time it forms an essential comfort in the household economy of the distant emigrant. The process by which the sap is obtained is extremely simple, nothing more being necessary than to bore a hole in the tree and conduct the flowing liquid by means of a hollowed piece of wood into a vessel beneath. Whatever quantity of sap

be collected, it must be boiled down the same evening, as it is liable to be spoiled by fermentation in the course of a few hours. The operation now mentioned is generally performed in a very primitive way, and is well described by the intelligent authoress of "Backwoods of Canada."—"My husband, with an Irish lad, began collecting the sap the last week in March. A pole was fixed across two forked stakes, strong enough to bear the weight of the big kettle. Their employment during the day was emptying the troughs and chopping wood to supply the fires. In the evening they lit the fires and began boiling down the sap. It was a pretty and picturesque sight to see the sugar-boilers with their bright log-fire among the trees, now stirring up the blazing pile, now throwing in the liquid and stirring it down with a big ladle. When the fire grew fierce, it boiled and foamed up in the kettle, and they had to throw in fresh sap to keep it from running over. When the sap begins to thicken into molasses, it is then brought to the sugar-boiler to be finished. The process is simple; it only requires attention in skimming and keeping the mass from boiling over, till it has arrived at the sugaring point, which is ascertained by dropping a little into cold water. When it is near the proper consistency, the kettle or pot becomes full of yellow froth, that dimples and rises in large bubbles from beneath. These throw out puffs of steam, and when the molasses is in this stage, it is nearly converted into sugar. Those who pay great attention to keeping the liquid free from scum, and understand the precise sugaring point, will produce an article little if at all inferior to muscovado."

We have dwelt rather at length upon this subject, as it illustrates in some degree the resources which the settler finds in the vegetation by which he is surrounded in the commencement of his labours; and there is perhaps no time at which men differ more from each other than on such occasions, in the ingenuity they exhibit, and in their readiness to discover and enjoy in the wilderness substitutes for the comforts and elegances of civilized life.

A moderate tree of the sugar maple is said to yield without injury twenty to thirty gallons of sap, from which may be extracted five or six pounds of sugar. This article is generally very hard, compact, and heavy, with a dull appearance and scarcely any grain; but the quality depends upon the care bestowed in the preparation. The lady whose authority we have already quoted, after making a series of experiments, found that by purifying the sap, observing certain rules in the boiling, and in draining off the molasses, the sugar was light compared with its bulk, well crystallized, tasting exactly like sugar-candy, and fit for any purpose. Nor is sugar the only product obtained from this valuable tree. Strong and excellent vinegar is made from it, as well as good wine; and, with the addition of hops, sound and pleasant beer may be had at a very trifling expense.

ROSACEÆ.

America is not rich in the "Queen of Flowers." There are only ten species enumerated in Hooker's Flora, three of which occur in Newfoundland, three in Canada, and three on the Saskatchawan and to the northward of that river. The remaining species (*Rosa cinnamomea*) Dr Scoular discovered on the shores of the Columbia. Brambles are more numerous, the same work containing twenty-one kinds. The common raspberry of Europe (*Rubus Idæus*) is described by Pursh as a Canadian plant; and Torrey, on the authority of Nuttall, says that it is indigenous throughout the upper province and on the borders of the lakes of the St Lawrence; but Hooker leaves it out of his Flora Boreali-Americana altogether, having no reference to it even as an erroneous synonyme. By his observation, however, that *R. strigosus* seems to hold the place of *R. Idæus*, it may perhaps be inferred that he does not consider the latter as a native, in which we think he is correct. Several of the American brambles produce desirable fruit; such as *R. strigosus*, called the red raspberry; *R. occidentalis*, the wild raspberry or thimbleberry; and *R. trivialis*,

the dewberry. Of *R. spectabilis*, a prickly shrub six to ten feet high, growing in North-west America, Douglas says the fruit is large, oblong, yellowish-white, and well flavoured. The cloudberry (*R. Chamæmorus*), whose fine orange fruit forms the most delicious preserve of our Scottish Highlands, is not unfrequent in Newfoundland, Labrador, and from Lake Winnipeg to the shores of the Arctic Sea. Two of the American brambles are highly ornamental,—one of them (*R. odoratus*) has been cultivated in our shrubberies for the last century under the somewhat absurd name of flowering raspberry; the other (*R. Nutkanus*) is of more recent introduction from the north-west coast. The former has large crimson flowers, and the fruit, never we believe seen in our gardens, is large, yellow, and of a fine honey flavour; the flowers of the latter are white, but equally remarkable in point of size. Above thirty species of *Potentilla* (cinque-foil) are known to exist in the northern parts of America, and we find also many other genera of the order with which the European botanist is familiar,—*Fragaria*, *Sibbaldia*, *Dryas*, *Geum*, *Agrimonia*, *Spiræa* (of which there are eleven species), and others.

In the *Pomaceæ*, which Professor Lindley now considers a sub-order of *Rosaceæ*, are some of those fine hawthorns which adorn our pleasure-grounds. Here we have also the genera *Pyrus* and *Amelanchier*. *A. ovalis* occurs throughout Canada, and is plentiful, as Dr Richardson informs us, on the sandy plains of the Saskatchawan. "Its wood, named by the Crees *Meesassquat-ahtic*, is prized for making arrows and pipe-stems, and is thence termed by the Canadian voyageurs *bois de flêche*. Its berries, about the size of a pea, are the finest fruit in the country, and are used by the Crees under the name of *Meesasscootoom-meena* both in a fresh and dried state. They form a pleasant addition to pemmican, and make excellent puddings, very little inferior to plum-puddings."

Amygdaleæ, another sub-order of *Rosaceæ*, contains among other genera the cherry (*Cerasus*). Seven or

eight kinds belong to the British Possessions, but none of them produce fruit to be compared with the common cherry of Europe. *C. depressa*, a low shrub, bears the sand-cherries of Pursh, which are said to be black, with an agreeable flavour. *C. Virginiana* affords an interesting illustration of the effect of climate upon vegetation: in the southern states it is a noble tree, attaining one hundred feet in height; on the sandy plains of the Saskatchawan it does not exceed twenty feet; and at its northern limit, the Great Slave Lake, in latitude 62°, it is reduced to a shrub of five feet. It is the *Tawquoymeen-ahtic* of the Cree Indians, and the fruit of it, termed *Tawquoymeena* or choke-cherry, is not very eatable in a recent state, but when dried and bruised is used with pemmican. *C. hyemalis* is the black choke-cherry. There seems to exist no little confusion about another species, *C. Pennsylvanica*, which we cannot attempt to clear up in this place. According to Pursh it very much resembles the wild cherry of Europe, small and agreeable to eat; on the other hand Dr Torrey considers them "scarcely edible." Then Hooker agrees with Torrey in viewing this and *C. borealis* of Michaux as the same species; but Pursh says of the cherries of the last-named tree that they occasion such an astringency in the mouth as to have acquired for them the name of choke-cherries, which does not at all agree with what he himself reports of *C. Pennsylvanica*.

LEGUMINOSÆ.

The Flora Boreali-Americana contains 125 *leguminosæ*, thirty-two of which are new species. But although this order is eminently rich in plants of the highest value in the arts and in domestic economy, few of those which are indigenous to the northern parts of America possess any interest except in a scientific point of view. Many of the species described in the above-mentioned work belong exclusively to the north-western parts,—the genus *Hosackia*, for example, various *Trifolia*, and all the Lupins but one. On the Rocky Mountains, and in

the regions north of the British settlements, are alone found many beautiful kinds of *Phaca*, *Oxytropis*, and *Astragalus*. It is deserving of notice, that of the total number of *leguminosæ* above recorded, no less than seventy-one are included in five genera; viz. twelve species in *Trifolium;* thirteen in *Phaca*, of which nine are new; ten in *Oxytropis;* sixteen in *Astragalus*, of which nine are new; and twenty in *Lupinus*, of which the greater part have been recently described by Douglas, Lindley, or Hooker. *Baptisia tinctoria*, a frequent plant extending from Canada to the southern states, affords a considerable quantity of an inferior kind of indigo. *Hedysarum Mackenzii* is the liquorice mentioned by Mackenzie in his voyage, and it appears to grow abundantly every where between the Saskatchawan and the Arctic Sea. Dr Richardson found a large quantity of the root in the stomach of a bear killed on the seashore, along with the remains of a seal and several marmots.

BETULACEÆ.

Although there are few American plants in this small order, and they are for the most part well known, they occupy too important a place in Canadian economy to be passed over in silence. The most useful are the birches, of which six kinds may be enumerated. *Betula lenta*, known by the names of black birch, cherry birch, sweet birch, and mountain mahogany, is a large and graceful tree, affording timber of great value. *B. pumila*, *B. nana*, and *B. glandulosa*, are all dwarf shrubs; the last, not above two feet high, and often much less, sometimes furnished the only firewood that could be obtained by Captain Franklin and his adventurous companions. The most celebrated American birch, however, is *B. papyracea*, the canoe-birch, so called from the use made of the bark in the construction of the Indian boats. It extends from the shores of the Hudson in New York to a considerable range of country northwards of Canada. The bark is obtained with facility in large pieces, and is sewed together with the tough and slender roots of some

of the pines. Bark-canoes, or "canots du nord," are so essential to every exploratory expedition in these regions, and are so admirably adapted by their lightness to overcome the impediments offered to the navigation of the lakes and rivers by the peculiar features of the country, that we make no apology for introducing a description of them from the pen of an American writer: "Although they are made nearly on the same model, yet there is great difference in their speed, burden, and soundness, according to the skill manifested in their construction. A canoe of this kind is generally constructed of ribs of cedar bent so as to impart to it its proper form, the ends being secured to a band that forms the superior edge of the vessel and acts as a gunwale; over these ribs the birch-bark is laid in as large pieces as possible, generally so that there shall be but two longitudinal seams, and two or three transverse; between the bark and the ribs very thin splints of cedar are placed so as to prevent the bark from splitting; all the joints are sewed with long threads obtained by splitting the roots of a tree called by the voyageurs *epinette*, and which is probably a spruce. To this thread the term *watap* used by the Chippeways is applied by the Canadians; the seams as well as the cracks are covered with pitch made of the gum of the epinette; this is applied hot, and renders the canoe water-tight. In this manner a little vessel is obtained very well calculated for travelling on these waters, as it will carry a burden of upwards of three thousand pounds, and when any obstruction in the navigation is encountered the cargo may be discharged, and the canoe easily carried by two men. Those which we used were thirty feet long by about four feet wide in the middle, and perhaps thirty inches deep. A number of transverse bars serve to keep the canoe in its proper shape. The seats of the paddlers are suspended to the gunwale. The bow and stern are sharp and turned upwards. The great objection that attends the use of bark-canoes is the difficulty of keeping them water-tight. It requires the greatest atten-

tion to prevent them from touching a rock or even the shore, as they would otherwise break; hence they are never brought near to the bank; two men keep the canoe afloat at a distance, whilst the rest of the crew load or unload her; the canoe is unloaded every night, raised out of the water, and left on the beach, bottom upwards. This is also occasionally done when they stop during the day; it affords an opportunity of allowing the canoe to dry, otherwise the bark absorbs much water, and becomes very heavy. All motion on the part of those on board is to be avoided, as it causes the pitch to crack, and renders the canoe leaky."*

From birch-bark the Indians also manufacture a variety of vessels for domestic purposes, capable of holding water or other liquids. Baskets of the same material they ornament very tastefully with patterns worked in dyed quills. The wood of the canoe-birch is in such request on the Saskatchawan among the Cree Indians, for making sledges, that, according to Dr Richardson, it has become scarce. The inner bark of the alder, we are informed by the same author, is used by the Crees both as an emetic and also for obtaining a yellow dye.

JUGLANDACEÆ.

North America is the principal station of the Walnut tribe; but of the ten species of walnut and hickory, both formerly considered as one genus, Pursh does not expressly give more than a solitary species to Canada, viz. *Juglans cinerea* (the butter-nut or oil-nut). Five others, however, are said to grow in New England, and it is probable that most of them will be found to extend northward. We have, in fact, received three species from the neighbourhood of Montreal. Only two of the American *Juglandaceæ* are retained in the genus *Juglans*—the true walnuts: the rest are called hickory-

* Keating's Narrative of an Expedition to the Source of St Peter's River, vol. ii. p. 72.

nuts, and belong to the genus *Carya* of Nuttall. The wood of all the species is extremely valuable, and the fruit of several highly esteemed; especially that of *C. olivæformis* (Illinois nut), which has a very thin shell, *C. sulcata* (Springfield nut), and *C. alba* (shag-bark hickory), the kernel of which is very large. *C. porcina* is the hog-nut, producing very small and uncommonly hard fruit. The tough wood of the last-named species is split into narrow slips, and converted into good and durable brooms.

PLATANACEÆ.

Platanus, the only genus in this order, contains four species, one of which, *P. occidentalis*, is found in North America, from Canada to the southern states. The proper English appellation is plane tree, but in the south it passes under the name of sycamore; while in the midland states it is called water-beech and button-wood; and in our possessions cotton-tree. In the fertile valleys of the Ohio and Mississippi, Michaux says that the undivided trunk attains an elevation of sixty or seventy feet, with a diameter at the base of from ten to sixteen. It is therefore, in regard to dimensions, one of the finest forest-trees of America; but as its wood is soft and of little value, it is only esteemed for its beauty.

ERICACEÆ.

Here we find many of the most lovely ornaments of the "American border" of our gardens:—Andromedas, Rhododendrons, Azaleas, and Kalmias. Among the Andromedas of Canada, are *A. tetragona*, a beautiful little shrub only a few inches high; *A. polifolia*, well known as a native of our own country, and *A. racemosa*, a graceful plant producing abundance of fragrant flowers in long racemes. Three species only of the superb genus *Rhododendron* inhabit Canada. One of them is *R. maximum*, the finest of the American kinds: that variety of it which has been called *purpureum* may be almost

compared with the tree-rhododendron of Nepaul, as it is sometimes found twenty feet in height, with a trunk from twelve to eighteen inches in diameter. The large and copious flowers of this species render it one of the most attractive plants in the country. The two other species, *R. nudiflorum* and the sweet-scented *R. viscosum*, are known in gardens as Azaleas, but in a scientific point of view are true Rhododendrons; the only real *Azalea* being the little alpine *A. procumbens* of our Scottish Alps, found also in Newfoundland and Labrador. Three species of *Kalmia* belong to the Canadian flora; two of them, *K. glauca* and *K. angustifolia*, delight in bogs, growing much in the same manner as the sweet gale (*Myrica gale*) of the British Islands. The third, the elegant *K. latifolia*, known by the name of calico-bush, rises on the sides of stony hills to eight feet in height; Torrey says, that on the Catskill Mountains it attains even twenty feet. The only remaining plant which claims to be noticed in this tribe is *Ledum palustre*, a low shrub, with terminal heads of small white flowers. It grows very extensively in Newfoundland, Labrador, and in the more northern regions, where it has received the name of Labrador tea, and is frequently used as a substitute for that article by the Canadian hunters. Being found in a dwarfish state on the shores of the Polar Sea by Captain Franklin's party, they were glad to try the decoction, and pronounced it to be refreshing, notwithstanding the smell, which much resembled that of rhubarb. It is one of the most remarkable circumstances in American vegetation, that no true heath has been discovered in any part of that continent.

VACCINIACEÆ.

North America is richer than any other part of the world in the whortleberry tribe. Pursh describes twenty-five species of *Vaccinium*. Sir W. J. Hooker has fourteen in his Northern Flora, eight of which come within our assigned limits; but it is extremely probable that several other species remain to be discovered. The

bilberry or blaeberry of England and Scotland was found by Drummond, near the height of land and Columbia Portage; and our *V. Vitis Idæa* is frequent, as well as *V. uliginosum*, in the more northern parts. As native fruits, *V. Pennsylvanicum* and *V. frondosum* occupy the place of the bilberry, although the fruit of several other kinds is eatable. The European cranberry (*Oxycoccus vulgaris*) occurs in Newfoundland, and appears to be scattered throughout Canada to the Arctic Sea. But *O. macrocarpus* is the cranberry of America, and produces a large berry, which is collected in great quantities for sale as well as for domestic consumption.

COMPOSITÆ.

The Flora Boreali-Americana contains about three hundred species of this, one of the largest orders in the vegetable kingdom. Seventy-three of these are new species, and about one-half of the whole number are indigenous to the British Possessions. Few of the more northern American *Compositæ* are remarkable for their properties; only a small proportion are said to be medicinal. *Eupatorium rotundifolium* and *E. perfoliatum* are tonic; the latter especially is, according to Pursh, exceedingly bitter, and has been used from time immemorial by the natives in intermittent fevers. It is generally known, he says, by the name of thorough-wort or bone-set. *Prenanthes serpentaria*, or lion's foot, is considered a specific for the bite of the rattlesnake. The beautiful *Liatris squarrosa* and *L. scariosa* are also esteemed for possessing a similar virtue, and pass by the name of rattlesnake's master. *Solidago odora*, one of the golden-rods, is said to be occasionally used as a kind of tea. Pursh even states that "the flowers, gathered when fully expanded, and carefully dried, give a most agreeable substitute for tea, which for some time has been an article of exportation to China, where it fetches a high price." We fear this Canadian beverage has ceased to please the Chinese palate. A curious fact is mentioned by the same author, of one of the rag-warts (*Senecio*

hieracifolius). He observes, "This is one of the plants which spring up in the most remote western countries, when the land is cleared of timber, particularly when the brushwood is burnt on the ground; from which circumstance it is generally known by the name of fire-weed. I have frequently found it covering a square piece of cleared land, when there was not a single plant to be found in any other place for a considerable distance round it." In the geographical distribution of the American *Compositæ*, the genera *Solidago* (golden-rod) and *Aster* are most conspicuous. In the former the colour of the flower is always yellow; and there are twenty-eight species in Hooker's Flora. Of Asters there are no fewer than forty-six kinds in the same work, eleven being quite new, besides several others now comprehended in the genera *Eurybia*, *Sericocarpus*, *Tripolium*, *Galatella*, and *Townsendia*.

CONIFERÆ.

The fir tribe has for many years excited a great degree of interest in this country; and amateurs, as well as professional individuals, have been assiduous in their endeavours to introduce new species and acclimatize the more tender kinds. Although their efforts have not in all cases been attended with success, the value of some has been more distinctly ascertained. The larch in particular, long underrated as a timber-tree, is now considered in a commercial point of view as best calculated for forest-planting in sub-alpine districts. The fir tribe abounds in North America, there being upwards of twenty species of *Pinus*, of which one-half are natives of Canada, Nova Scotia, or Newfoundland; and these we shall briefly proceed to notice. *Pinus balsamea* (balm of Gilead fir, or American silver fir) grows to the height of fifty feet, and is an elegant tree, resembling the silver fir of Europe, but is said to be inferior to it for the purposes of ship-building. The resin of this species is the common Canada balsam; and we are informed by Mr Lam-

bert, that it is often substituted for the balm of Gilead, which is the product of *Amyris Gileadensis*. *P. Canadensis* (hemlock spruce) is a beautiful and very large tree, bearing some resemblance in its foliage to the common yew, and producing cones scarcely larger than a hazel-nut. The bark is said to be valuable for tanning leather. This species is found on the highest mountains, as far south as Carolina, and from thence to the most northern regions of Canada. *P. nigra* (black or double spruce) occurs on mountainous tracts, from Carolina to Nova Scotia, and, according to Dr Richardson, terminates, together with *Betula papyracea*, in latitude 65°. The bark of the trunk and branches is blackish: the wood is put to various purposes, and is sometimes used in boat-building. *P. rubra* (Newfoundland red pine) grows chiefly in that island, Nova Scotia, and about Hudson's Bay. It attains a height of thirty feet, but we are unacquainted with the quality of its timber. *P. alba* (white spruce) flourishes from lat. 43° northwards, and abounds in Nova Scotia and Canada. Its growth is nearly equal to that of the European silver fir, one hundred and forty feet in height. The cultivation of this tree is particularly recommended by Wangenheim, not only on account of its large size and useful timber, but because it delights in situations unfavourable to the production of other kinds. Lambert observes, that it is one of the most ornamental of the *Abies* tribe (those having single, not fasciculated leaves); the branches feather down to the ground, and the leaves have a beautiful and peculiar glaucous hue. From the young shoots of this and the two preceding species is obtained the resinous extract from which the well-known spruce-beer is made. The bark of the white spruce is used for tanning, and good turpentine is obtained from it. Dr Richardson remarks, that it is the *meenahic* of the Cree Indians, and the most northerly tree that came under his observation. "On the Coppermine River, within twenty miles of the Arctic Sea, it attains the height of

twenty feet or more. Its timber is in common use throughout the country, and its slender roots, denominated *watapeh*, are indispensable to canoe-makers for sewing the slips of birch-bark together. The resin which it exudes is used for paying over the seams of the canoes, and canoes for temporary purposes are frequently formed of its own bark. It is the only tree that the Esquimaux of the Arctic Sea have access to while growing, and they contrive to make pretty strong bows by joining pieces of its wood together."* *Pinus resinosa* (pitch pine) grows in Canada in close forests, and is distinguished for its great height and remarkably smooth red bark, whence it is often called red pine by the French population. It yields a large quantity of fragrant resin, but the wood does not appear to be much valued, being too heavy to serve as masts; and Michaux states that it has been found to contain too much sap to be good for general purposes. *Pinus Banksiana* (Labrador scrub, or gray pine) inhabits cold, barren, and rocky situations in Nova Scotia, Canada, and Hudson's Bay. Pursh says, that when growing among the barren rocks, it is a small straggling tree, scarcely eight feet high, but that, in more favourable situations, it attains a considerable size. This must be the fact, for Lambert mentions its extreme knottiness as the only objection to the timber being converted into good masts; and Dr Richardson has the following notice of it in his Appendix to Franklin's Narrative:—"This tree occupies dry sandy soils, to the exclusion of all others. It is a handsome tree, with long spreading flexible branches, generally furnished with whorled curved cones of many years' growth. It attains the height of forty feet and upwards in favourable situations, but the diameter of its trunk is greater in proportion to its height than in any other pines of the country. In its native situation, it exudes much less resin than the *Pinus alba*. The Canada por-

* Richardson, Appendix to Franklin's Narrative.

cupine feeds on its bark; and the wood, from its lightness and the straightness and toughness of its fibres, is much prized for canoe timbers. The Canadian voyageurs term it cypress, the Crees *ooskartawuc-ahtic*. It occurred on our route as far to the northward as lat. 64°; but it is said to attain higher latitudes on the sandy banks of Mackenzie's River." *P. Strobus* (white or Weymouth pine) is found in the greatest perfection between the forty-second and forty-fifth degrees of north latitude. It is the largest species on the eastern side of the Rocky Mountains, being sometimes two hundred feet high, and the trunk five feet in diameter. It is also the most useful species. Wangenheim mentions that he saw, in the dockyards of Plymouth, "two masts for seventy-four gun ships, which measured one hundred and eight feet in length, and a roller that was every where three feet in diameter. Such a tree must have been two hundred feet long, and five feet or more in diameter."* The wood is somewhat hard, very fine, and works straight, smooth, and shining. It yields a fine resin, capable of being converted into good turpentine. The principal forests of it in the British Possessions, according to Lambert, are on the shores of Fundy Bay and Casco Bay, and from the extreme northern side of the river St Lawrence towards Montreal, and the shores of Lake Champlain. *Pinus pendula* (black larch, or *hack-matack*) is represented by Pursh as growing in low cedar swamps; by Wangenheim, in cold mountainous situations. It is a beautiful and large tree, with weak and drooping branches, but generally resembling its invaluable ally, the larch of Europe. The buds are black, and yield a fine turpentine; the cones are smaller than those of the European species; the wood is excellent and durable, and the bark useful in tanning. *Pinus microcarpa* (red larch) inhabits the shores of Hudson's Bay, and resembles the preceding so much, that Michaux re-

* Lambert's Monograph of the genus *Pinus*.

garded them as one species. The red larch, however, is now clearly established as a distinct kind. The cones are much smaller, and of a fine purple colour; but we find no account any where of the quality of the timber. Dr Richardson met with it in "swampy situations from York Factory to Point Lake in lat. 65°; but in the latter place it is very dwarfish, seldom exceeding six or eight feet in height. It is named by the voyageurs *l'epinette rouge*, and by the Hudson's Bay men; juniper. Its Cree name is *wagginawgan* (the tree that bends)."

Before we leave this interesting tribe, we cannot refrain from devoting a few words to a pine discovered in Northern California by the late Mr David Douglas; a noble tree in itself, and the most splendid vegetable production on the western side of the Rocky Mountains. It covers large districts, not, however, forming dense forests, but scattered singly over the plains. The trunk is remarkably straight, and clear of branches for two-thirds of its height: Mr Douglas measured one specimen which had been blown down by the wind, which he observes was certainly not the largest he had seen, and the dimensions were as follow: The entire length, two hundred and fifteen feet; the circumference three feet from the ground, fifty-seven feet nine inches, and at a hundred and thirty-four feet from the ground, seventeen feet five inches. "The cones are pendulous from the extremities of the branches; they are two years in acquiring their full growth, are at first upright, and do not begin to droop, I believe, till the second year. When ripe, they are about eleven inches in circumference at the thickest part, and vary from twelve to sixteen inches in length."* A remarkable circumstance is mentioned in connexion with this tree;—when the trunk is partly burned, the resin which exudes becomes as sweet as sugar, and is used as a substitute for that article by the natives. The seeds

* Dougl. in Linn. Trans. vol. xv. p. 498.

are also roasted for food, and made into cakes and laid by for winter consumption. The author just quoted has bestowed on this truly magnificent pine the name of *Lambertiana*, in honour of Aylmer Bourke Lambert, Esq., the author of the splendid monograph on the genus to which it belongs. The following species, some of them noble trees, are also indigenous to North-west America: —*P. inops, Sabiniana, Menziesii, nobilis, Douglasii, grandis*, and *lasiocarpa*.

ORCHIDACEÆ.

Canada is not rich in orchideous plants; but some of them are of great beauty. *Arethusa ophioglossoides* and the sweet-scented *A. bulbosa* have large and delicate purple flowers. *Cymbidium pulchellum* is equally handsome; and the solitary blossom of the little *Calypso borealis* is one of the gems of the northern flora. But the most conspicuous, both for size and singularity, are the *Cypripedia*—the ladies' slippers, or mocassin-flowers of America,—and four species are indigenous to Canada. One of them (*Cypripedium spectabile*) is a large plant, two or even three feet high, with one to three very large flowers, having the lower lip white, with red veins and crimson spots within. *C. Arietinum*, on the contrary, is scarcely more than a span in height, and the flower is said to have a very singular appearance, resembling a sheep's head, when viewed in front; the two lateral sepals representing the horns.

We shall here close our botanical notices; not because our materials are exhausted, for even the mosses and lichens which abound in the more northern regions are full of interest. Some of the former are exceedingly beautiful; especially those belonging to the genus *Splachnum*, specimens of which exist in the extensive and valuable collection published by Mr Drummond, assistant naturalist to the second over-land Arctic expedition. Various kinds of lichen are capable, by due preparation, of being rendered edible; and they who have

perused the affecting narrative of the sufferings of Captain Franklin and his gallant party, on their return from their first journey to the Arctic Sea, will remember that it was on several species belonging to the genus *Gyrophora*, called *tripe de roche* by the Canadian voyageurs, that they depended, under God, for their very existence. The barrel of meal wasted not, neither did the cruse of oil fail. "We looked," says Captain Franklin, "with humble confidence to the great Author and Giver of all good, for a continuance of the support which had hitherto been always supplied to us at our greatest need:" and he was not disappointed.

GEOLOGY.

CHAPTER VII.

Geological Sketch.

General Geological Sketch of British North America—Lakes—Rivers—Barrow's Strait—Melville Island—Prince Regent's Inlet—Melville Peninsula—Upper and Lower Canada—New Brunswick—Nova Scotia—Cape Breton—Prince Edward Island—Newfoundland.

It is not easy to give a general character of the geology of regions so vast, and so different in the climate of the several parts, extending from the shores of the Frozen Ocean to the confines of the United States of North America. A great portion of this territory is thinly peopled by a few barbarous native tribes, and seems incapable of becoming available for the permanent residence of civilized man, from the rigour of its climate and the nature of its surface. Its more southern portions, however, including the two Canadas, New Brunswick, Nova Scotia, Cape Breton, and Newfoundland, have of late rapidly increased in a population of European extraction, and acquired importance from the produce of their industry and enterprise.

The general surface of these countries has been sufficiently indicated in the preceding portion of this work, and we shall now offer a general sketch of its geological features. Extensive *primary* formations stretch along the western side of Baffin's Sea and the coasts of Labrador; they thence extend to Newfoundland, and have been traced by Captain Bayfield along the northern shores of the Gulf of St Lawrence. They reappear on the eastern coast of Nova Scotia; but the main body of that formation continues to skirt the St Lawrence, and,

forming the intricate granitic barrier of the Thousand Islands at the outlet of Lake Ontario, it sends one branch through the state of New York to join the primary formations of the Alleghanies, while a second, leading westward, touches the northern shores of Lakes Ontario, E[illegible] Huron, and Superior, and constitutes an extensive c[illegible] of low hills which seldom attain an elevation of 5[illegible] feet above the general level. Thence, inclining to the north, primary formations skirt the eastern banks of that singular series of rapids, streams, and lakes termed Winnipeg River, and forms the eastern shores of the great lake or inland sea of that name. The general breadth of these primary formations is not well ascertained; but where Captain Franklin crossed from Hudson's Bay to Lake Winnipeg, the primary district was not less than 220 miles wide. From the last-mentioned lake they incline a second time to the west, as far as Lake La Crosse; when, again turning more northward, they pass along the eastern shores of Lake Athabasca, stretch to Slave Lake, where they appear in M'Tavish Bay at its south-eastern extremity, and are continued to Fort Franklin on Bear Lake. In latitude 66°, the primary rocks approach within 200 miles of the mighty chain of the Rocky Mountains; but to the north of Bear Lake they seem to be concealed under rocks of transition and of secondary formations. The vast chains of the Rocky Mountains are extremely diversified in their structure; but if we consider that portion which was several times crossed by the late lamented botanist Mr Douglas, near the sources of the Columbia, as a specimen of their structure, we may describe them as consisting of three parallel longitudinal ridges, the breadth of which he computed at 116 miles, sixty or seventy of which present a most desolate and rugged region, in which the traveller is in no small danger of starvation. The nucleus seems to be granite, covered by gneiss, mica slate, and clay slate; the eastern flanks presented the ordinary secondary formations; but he described the western side as very steep, and, especially in the second valley of the Columbia, as bear-

ing evident traces of terrible volcanic convulsions and eruptions, though no active volcanoes were seen.

Gneiss is the most abundant constituent of the primary districts; granite is the next in consequence; the third is mica slate; but true primary clay slate is a rare occurrence. The granite is chiefly red, but the variety in which talc, chlorite, or steatite take the place of mica, termed *protogene*, occurs in abundance in the vicinity of Slave River; and syenite occasionally occurs amid the common granite.

The primary chain may be considered as separating the vast and fertile plateaux of the Mississippi and Missouri from the extensive but barren wastes that decline from the primary ridge to the shores of the Frozen Ocean; among the more recent strata of which, to the east of Copper Mountains, granite and gneiss occasionally crop out.

The largest portion, however, of British America consists of newer rocks. Of the formations described by Werner under the name of *rocks of transition*, the range is not extensive. This formation occurs in contact with the primary rocks in Melville Island, in several other points in the Arctic Sea, in the countries bordering on the Sea of Hudson, and in Nova Scotia, where it chiefly appears as quartz rock, sandstone, greywacke, and greywacke slate. Similar rocks were observed by Dr Richardson on Point Lake, on Coppermine River, and on Hood's River; and when those inhospitable regions are more carefully explored, it is not improbable that the members of this formation will be found very generally to lie in immediate contact with the primary rocks. If, however, we may be permitted to consider the rocks of transition merely as the oldest series of secondary groups, then we might conclude that *secondary formations* of sandstone, limestone, clay slate, and shale constitute by far the greatest part of the vast regions now under consideration. On this view, secondary rocks would form two vast plateaux on the North American continent; one extending from the shores of the Arctic Ocean to the primary spine already described;

the other from its southern side, and the basins of the great lakes over the valleys of the Missouri and the Mississippi, even to the shores of the Gulf of Mexico. The researches of Drs Bigsby and Richardson, of Captains Franklin and Parry, have shown the identity of the limestone of Lakes Erie, Huron, Winnipeg, the Saskatchewan, and of Cape Parry and Barrow's Straits in the Arctic Sea, by the identity of organic remains. The encrinites, orthoceratites, corallines, and terebratulæ seem to prove that it is of the same era with the carboniferous or mountain limestone of England, and this is further confirmed by its being covered by bituminous shale, and sometimes flinty slate, especially on the shores of the Arctic Sea, on Clearwater and Elk rivers, and by the occurrence of considerable coal formations on Mackenzie River, between it and the Rocky Mountains, and on the Arctic coasts and islands, which appear to overlay this limestone. It must, however, be admitted that the magnesian character of much of this limestone, and its generally occurring in nearly horizontal strata, might induce one to refer it to the second secondary or magnesian limestone. Thus beds of a limestone, often bituminous, alternating with clay, marly sandstone, and alum slate, occur on Bear Lake at the mouth of Dease River. Similar strata are found on the Elk, Slave, and Mackenzie Rivers. The occurrence of gypsum and salt-springs there would lead to the inference that these rocks belong to the new red or variegated sandstone formation, which probably also extends along various parts of the Arctic coasts. The abundant occurrence of an efflorescence of sulphate of soda, about twenty miles north of Carlton House, between the two branches of the Saskatchawan, and the numerous salt-springs, indicate the existence of a rock-salt formation connected with the new red sandstone of those parts. The wood-coal or lignite formation of Mackenzie River is very remarkable. Four beds of wood-coal were observed interstratified with pipeclay, gravel, sand, and a friable sandstone, in cliffs of 120 feet high. These sometimes have

spontaneously taken fire, and appear to have burnt for many years. Similar appearances were observed by Richardson at Traill Point on the Arctic Ocean, lat. 70° 19′ N. Here, and for several miles along that coast, the cliffs are composed of bituminous alum shale; in the interstices of which are found much pulverulent alum mixed with sulphur, and layers of that wax-yellow-coloured variety of alum, termed *rock-butter*, accompanied by crystals of selenite. Beds of coal occur on the south and north branches of the Saskatchawan, and on the east branch of the Peace River, where they are now on fire, and also on the upper part of Elk River. The pipeclay on the Mackenzie is said to be occasionally eaten in times of scarcity by the natives.

The sandstone of North America appears to belong to three distinct eras; the old red sandstone; a sandstone associated with gypsum, as in Nova Scotia and on Elk River, which belongs to the new red sandstone; and a crumbling white one, which is soft, occurs in thin strata, and overlays the lignite just mentioned.

The *Floëtz Trap* formation appears to be very widely distributed. The bases of the Copper Mountains present a greenstone amygdaloid, abounding in prehnite and native copper, copper glance, and purple copper ore. It lies on the old red sandstone, or on a clay slate of the transition formation. The prehnite is the usual indication of the copper, and they appear to form veins in a trap abounding in felspar. Another range of trap-hills occurs ten miles north of the Copper Mountains, and about twenty miles from the Arctic Ocean. This greenstone forms the east side of the Bay of Fundy in Nova Scotia, and appears in veins and beds in various other parts of Northern America, especially at Bloody Falls on Coppermine River, on Lyon Inlet, Cape Wilson, Tern Island, Whyte's Inlet on Cockburn Island, Cape Kendall, and other points on the Arctic Ocean.

Tertiary deposits, if we except the newest floetz trap, have not yet been investigated; but the alluvial deposits in the Northern Ocean, especially at the mouth of

Mackenzie River, and on the great northern plateau of America, are of large extent, consisting of sand and gravel. Clay also frequently occurs on the northern coast, but is rather sparingly distributed on the coasts of Baffin's Bay. Gravel and clay, with boulders, cover an extensive tract to the west of Hudson's Bay; and granite boulders and transported masses of hornblende, porphyry, syenite, and limestone, are found every where in the countries explored by Parry, Ross, Franklin, and Richardson. On the shores of the Arctic Sea enormous blocks have been transported by floating ice; and similar effects may be traced on the great fresh water lakes from the same cause.

One of the most remarkable geological features of North America is the number and extent of its

Lakes.—If we commence with the most northern of these, Great Bear Lake, we find, at no great distance from the Arctic Ocean, a vast reservoir of fresh water, irregular in figure, but with a diameter varying from 100 to 150 miles, and of such a depth as to exhibit a blue colour. The surface of this lake appears to be no more than 200 feet above the level of the sea; and as its depth far exceeds that measure, the bed of this lake must be below the surface of the ocean. A chain of minor lakes connects it with the still more extensive Slave Lake, the length of which is 200 miles, with a breadth of 100. From the communication between them, they seem to be nearly on the same level. A second chain of lakes and rapids conducts to Winnipeg, a lake of scarcely inferior dimensions. A third chain of smaller lakes and rapids leads the traveller, in a south-east direction, to Lake Superior, the most northern of the three prodigious expanses of water designated Lakes Superior, Huron, and Michigan, which, taken together, have not inappropriately been designated as the *inland sea* of North America. The first branch, or Lake Superior, has a length of 360 geographical miles, a breadth of 140, and a circumference of about 1500 miles. Its coasts are generally rocky; in some parts it is 1200 feet deep, and its

medium depth may be taken at 900. It is remarkable for the transparency of its waters, which it owes to its rocky margins and the little earthy matter carried into it by its tributary streams. Lake Superior communicates with Lake Huron by the Strait of St Mary, a channel varying in breadth from one to two miles. Lake Huron has a length of 240 miles, a breadth of 220, and a circumference of 1000 miles; it communicates with the Michigan by a short gut, four miles wide.

Lake Michigan is 260 miles by 55, and has a circuit of 900 miles. It lies wholly in the United States. The whole superficies of these three lakes is computed at 72,930 square miles; the altitude of their general surface is 640 feet above the sea, while their depth shows that their bottoms are considerably below that level. This immense collection of water is on a higher level by 300 feet than the basin of the Upper Mississippi, and might create some idea of danger to the fertile territory watered by its streams, were that country subject to earthquakes; for, "should earthquakes disrupt the intervening barrier, the waters of the great inland seas would sweep those plains with a devastation quite unparalleled in the history of our planet since the deluge of Noah."*

Lake Erie is a comparatively shallow lake, communicating by an irregular channel with Lake Huron. Erie is 265 miles long, and has thirty-five of mean breadth. Its depth in no part exceeds 270 feet, and seems to be rapidly diminishing from the quantity of earthy materials carried into it by numerous rivers.

Another lake, the surface of which is 300 feet below the surface of Erie, communicates with its eastern extremity by the River Niagara, which, after flowing in a full stream for twenty-one miles, is precipitated over the far-famed cataracts of Niagara in a single leap of 160 feet in height; it thence flows through a rocky chasm to Queenston, where there is a sudden lowering of

* Encyclopædia Britannica.

the level of the country; and, after passing through a flat region for seven miles farther, it mingles with Lake Ontario, another fresh water sea, 172 miles in length and 59¼ in breadth. This lake is about 300 feet deep, and its bottom is fully as low as that of the Gulf of St Lawrence, and about the same level as the bottom of Lake Huron. The whole area of these five last noticed lakes cannot be less than 80,000 square miles.

The appearance of the country tends to show that the falls of Niagara were once at Queenston. In the period since they became known to Europeans, they are supposed to have receded towards Lake Erie; and, in the lapse of ages, should the disintegration of the soft limestone continue, by the opening of the eastern barrier a large mass of the waters of the inland seas may overwhelm a portion of the fertile plains of the State of New York and of Lower Canada.

Rivers.—The St Lawrence is one of the noblest rivers in the world. At its mouth it is not less than ninety miles in breadth, and is navigable for ships of 600 tons as high as Montreal, 560 miles from the sea. Two hundred and sixty miles above its embouchure, it is still eighteen miles in breadth; at 400 miles, opposite to Quebec, it narrows to 1314 yards, but again expands; and, even at Montreal, it is still about three miles from shore to shore. It is more difficult to state its length, because some geographers place its source in Lake Superior, considering the vast expanses of Ontario, Erie, and Huron as mere appendages to this river; but it appears to us that the geographer should, with the native, limit its origin to Lake Ontario, which will still leave it a course of 700 miles.

Several considerable rivers fall into Hudson's Sea; of these, the Albany, the Severn, the Hill, the Nelson, and the Churchill are the chief. The Nelson is a fine river, and carries off the waters of a vast extent of territory; especially if we consider the Saskatchawan as one of its branches. The Saskatchawan is an immense river, having its sources in the Rocky Mountains, and after dilating in the plains into a succession of small lakes, termi-

nating in Lake Winnipeg; but there seems to be another branch sent off from these lakes, which conducts a portion of its waters into the Nelson; so that these two, running in the same direction, may probably be considered as a single river. Coppermine and Mackenzie Rivers have a general course, almost at right angles to the Saskatchawan. The former rises in the primary chain between Slave and Great Bear Lakes, and running almost north, pours its waters into the Arctic Ocean. The Mackenzie is a much more magnificent stream, forming the great outlet of Bear Lake, and, inclining toward the chain of the Rocky Mountains, after a course of at least 700 miles, terminates by numerous channels in the same sea. The only other stream we shall here notice is a tributary of the St Lawrence, below Quebec, the Saguenay, a rapid broad stream, of moderate length, but remarkable for its depth. The reports of its profundity are probably exaggerations, arising from the difficulty of obtaining soundings in a deep and rapid river.

After this general sketch, we shall proceed to describe more minutely the geological features of some of the districts which have been most accurately examined, commencing with the most northerly.

Barrow's Strait.—The whole northern shores of this arm of the Arctic Sea appear to consist of horizontal strata of floëtz limestone and sandstone, which frequently present grand mural precipices. The characters of this limestone and its fossils seem to assign it to the carboniferous limestone formation.

Prince Regent's Inlet, on both shores, exhibits the same limestone; but at Port Bowen this formation is covered by beds of gypsum and thinner slaty limestone, probably belonging to a newer series of rocks.

Byam Martin's Island appears to be the summit of a primary mountain rising through the secondary rocks; and similar rocks occur around Winter Harbour, on Melville Island, where granite, gneiss, syenite, and

hornblende rocks occur on the surface. This island is 130 miles long, and from forty to fifty in breadth; and, from specimens which we have inspected, compared with the descriptions in Captain Parry's Voyages, we should be disposed to refer the limestone, sandstone, and coal to the older coal formations. Encrinites and trilobites abound in the limestone, and occur also in the sandstone; in the shale are arborescent ferns, and plants like those of the coal formations of Great Britain. The coal in general is *brown*, with streaks of bitumen. In a specimen of ironstone from this locality was found a new species of *avicula*. Newer trap rocks seem also to occur in this island. Lofty sandstone cliffs constitute Cape Dundas, its western promontory.

The peninsula and chain of islands stretching southward from Cockburn Island to Hudson's Sea were chiefly discovered and explored in Captain Parry's second voyage. This tract has but little elevation; seldom rising to 1000, and never exceeding 1500 feet. The hills in general are rugged and naked, the valleys narrow and abrupt, the soil scanty, and frozen to the depth of a foot for the whole year. Such a country can have no springs, and but little vegetation.

Cockburn Island presents granite, gneiss, and clay-slate; and at Whyte's Inlet a secondary greenstone is found.

In the strait of the Fury and Hecla, the prevailing rock is granite and quartz rock; but Amherst Island consists of greywacke slate, greywacke, and a species of red quartzy sandstone.

Primary Rocks constitute a large portion of Melville Peninsula and the contiguous islands. The following simple minerals occur in the granite and gneiss of that region:—

Rose quartz, in Lyon Inlet, coast north of Cape Wilson, Winter, Rendezvous, and Liddon Islands.

Actynolite, in Lyon Inlet and Barrow River.

Epidote, in Lyon Inlet, north of Cape Wilson, and Winter Island.

Precious garnet, in Winter Island, Lyon Inlet, Five-Hawser Bay, and Safety Cove.

Schorl, in Winter Island, and north of Cape Wilson.

Beryl, in Winter Island, in small crystals.

Iron glance, in Winter Island.

Magnetic iron, on coast north of Cape Wilson.

Iron pyrites, in Winter Island and Cape Wilson.

Graphite, in Winter Island, Five-Hawser Bay, north of Cape Wilson, and on Barrow River.

The variety of granite termed *protogene*, in which chlorite takes the place of mica, occurs in Lyon Inlet and in Winter Island.

Mica slate is found in comparatively small quantity; and, in the opinion of Professor Jameson, seemingly subordinate to the gneiss formation; which last constitutes the principal part of the Arctic lands visited by Captain Parry. Some of it passes into clay slate. It contains several of the simple minerals in the above list.

Clay slate is much less frequent than mica slate. It is chiefly found in Winter Island, Richards' Bay, on the coast north of Cape Wilson, and in Bouverie Island.

Chlorite slate is more abundant in those regions than the two last rocks, and, besides several of the minerals already noticed, was found in Winter Island to contain *indurated talc* and *red iron ore*.

Hornblende rock occurs in Lyon Inlet, Safety Cove, Winter Island, Five-Hawser Bay, and Tern Island. It occurs as primitive greenstone at Neerlo Nakto, and contains many of the simple minerals above enumerated.

Serpentine occurs in Lyon Inlet, Moyle Bay, Winter Island, Liddon Island, Bouverie Island, and Neerlo Nakto.

Primary limestone is found in Five-Hawser Bay, Lyon Inlet, Barrow River, and Cape Wilson. The chief embedded minerals are—

Crystallized mica, in Winter Island and Barrow River.

Augite, in the same localities and Lyon Inlet.

Precious serpentine, in Winter Island.

Sphene, with titanic iron, in Winter Island.

Graphite, in Igloolik, Barrow River, and Cape Wilson.

Porphyry does not occur in any of those regions, except as a variety of granite.

Rocks of Transition occur, as quartz rock and red sandstone, greywacke slate, drawing slate, flinty slate, and limestone. The first is found in all the places already enumerated, and also in Owlitteewik, Amherst Island, and in Whyte's Inlet on Cockburn Island. The embedded minerals are many of those already noticed, with much iron ore. Greywacke slate is sparingly distributed; but occurs at Neerlo Nakto, and in Winter, Amherst, and Bouverie Islands; the drawing slate only in Winter Island; and the flinty slate only in Lyon Inlet. Transition limestone probably occurs in Amherst Island, in the greywacke slate.

The only *Secondary Rocks* in this district are limestone, bituminous shale, and trap rocks. The limestone seems to belong to the mountain limestone formation; and occurs in many points along the coasts of Melville Peninsula, and in all the islands on its coasts. The island of Igloolik, in particular, seems to be composed almost wholly of this limestone. In this limestone occur two species of trilobite, a productus, a trochus, a turritella, a nautilus, an orthocera, and a new lamelliform coral with flat lobes. The specimens of primary rocks brought home by Parry from that island were fragments of detached blocks, which may have been transported by floating ice, or in a former age by currents.

The bituminous shale is chiefly found in Lyon Inlet, and on Winter Island. Trap is a scarce production, which seems to occur in veins as a species of greenstone. It occurs north of Cape Wilson, in Tern, Amherst, and Cockburn Islands.

Alluvial Formations are very scarce, except in the form of boulders, or gravel, chiefly of granite; as on the surface of Igloolik and Amherst Islands. Southampton Island appears to be of primary formation. Repulse Bay Captain Parry has found to terminate in

a cove, with a deep ravine running into it from the west, through beds of gneiss, which are traversed by numerous veins of red felspar.

The coast of LABRADOR has been examined very imperfectly; but the best account we have of its geology is contained in the Memoir of Steinhauer in the Geological Transactions, Volume II., who represents the coast as consisting of primary rocks. A chain of high mountains appear inland, which cannot be less than 3000 feet above the sea: the natives term it Nachwak: it is in lat. 59°. The mountain of Torngarsuit, or Evil Spirit, lat. 60°, is rugged and black. In it is a huge cavern, the abode, as the natives say, of the devil. The tide here rises forty or fifty feet, while on the east coast its rise is only eight or ten. The high land of Kiglapyed is always clothed with snow, in latitude 57°, and even the Mealy Mountains, in lat. 53° 50′. Trigonometric observation gives 2733 feet as the elevation of Mount Thoresby. The islands on the coast, as Ammittok, lat. 59° 20′, are composed of granite, syenite, and hornblende rock. The best potstone, of which the natives make their cooking vessels, is said to come from the mountains of Nachwak in Nachwak Bay. The well-known Labrador felspar is found south of Kiglapyed, but is chiefly brought to us from the vicinity of Nain, especially from a lagoon in which the river of Nain terminates, where it is associated with hyperstene. The strata in Nulletartok Bay are alternately black and white: the black appear to be a bituminous alum shale, and the white swinestone: both abound in bitumen, and sulphuric acid seems to exude from the shale. The island of Ukusiksalik abounds with potstone of the gray opaque species, generally used for lamps and other cooking utensils by the Esquimaux of the coast. At Hopedale, near Cape Chudleigh, mountain limestone with schiefer spar occurs. Of the southern coasts, along the straits of Belleisle, we know very little, except that they are primary; but we have a better idea of the north coast of the Gulf of St Lawrence from long. 60° to 70°, from the survey of Captain Bay-

field, R. N. The portion surveyed extends for 500 miles from Cape Whittle to the mouth of the Saguenay. The formations are granite, gneiss, syenite, on which, in some places, reposes limestone, with alluvial deposits in the valleys.

Mountains of little elevation, seldom exceeding 1000 feet, form undulating ridges, which sometimes approach the coast. They are chiefly of granite, gneiss, and syenite, often containing hornblende and hyperstene; and veins of trap were occasionally observed. Magnetic iron appeared to be a very abundant production, occurring in the rocks in beds, and in detached nodules, or in the form of sand on the beach. The abundance of magnetic iron ore in those northern regions, so near one of the magnetic poles, is worthy of observation. The coast opposite to the Mingan Islands has limestone over the primary rocks. In this group, and in Esquimaux Islands, the limestone is in nearly horizontal strata, reposing on syenite. This limestone is precisely similar to that of Lake Huron, as is proved by its organic remains. The dip of these beds is to west.

The clay and sand often form beds thirty feet thick in basins, and in the valleys between the syenite hills. The gravel lies over the clay.

Modern alluvial accumulations are rapidly increasing on some points of this coast, owing to the enormous mass of fresh water charged with earthy matter that here mingles with the sea. The surface of the water at the mouth of the St Lawrence, where the depth is 100 fathoms, is stated by Bayfield to be turbid from this cause,—yet that this discoloration is superficial is evident; for in the wake of a ship moving through the troubled surface, the clear blue waters of the sea are seen below.

Two interesting remarks prove that the main coast and the Mingan Isles have sustained successive elevations; sea-beaches may be distinctly traced on those islands to the height of seventy feet above the present level of the gulf. On the main also, Captain Bayfield observed

parallel ridges of sand, containing shells analogous to those of the adjacent sea.

The southern shores of the estuary of the St Lawrence consist of greywacke and greywacke slate, covered by limestone similar to that of the Mingan Islands.

We have already sufficiently described the geological features of the vast regions extending from the great interior seas of fresh water to the Arctic Ocean, and we shall turn to

Upper Canada.—We are principally indebted to Dr Bigsby and Dr Richardson for the geology of this region.

The country to north and north-east of the Lakes Superior and Huron is generally steril and rocky, but seldom attains an elevation of 500 feet above the surface of the lakes. The higher grounds are naked, the valleys swampy or occupied by small pools, forming a striking contrast to the fertile plains to the southward of the great lakes. The lakes in fact are the boundary between the primary and secondary formations. The northern coasts of Lake Superior are in general of gneiss and granite ; but its southern shores are of limestone. Lake Huron is about 590 feet above the sea, and Lake Erie about the same above the tide-water in the river Hudson, the difference of level between the two lakes not being more than twenty-nine feet. The islands near the Canadian coasts of the Huron are evidently continuations of the granitic ridges of the northern shores, but these are on the utmost verge of the primary rocks : towards its upper parts and the contiguous shores of Lake Superior, secondary limestone makes its appearance, and forms the island of St Joseph, in La Cloche Passage. This island is remarkable for having its ridges to the height of 500 feet covered with debris of other rocks ; which have every appearance of transported materials deposited before the island had attained its present elevation. This limestone Bigsby appears to refer to the same era as the Dudley limestone of England. Dr Richardson found the same species of ortho-

ceratite, described by Bigsby as occurring in Thessalon Island, in the limestone of the La Cloche Passage, and he considers this limestone exactly to resemble that of Winnipeg and of Cape Parry on the Frozen Ocean; and from the organic remains brought by Captain Franklin from the Arctic shores, containing orthoceratites, terebratulites, spirifers, encrinites, caryophyllites, and lingulites, we must consider these formations as pertaining to the mountain limestone.

The Manitoulin Isles nearest to the Canadian shore are granitic,—like the singular barrier of Lake Ontario, the Thousand Islands. The northern shores of the Huron are all primary; but the opposite coast is of secondary limestone, and for sixty-four miles south of Cabot's Head it forms a series of limestone bluffs and precipices sometimes 300 feet in height. Near the river Missassagua primitive greenstone is found upon the granite. The low and sandy shores of Lake Nipissing exhibit mounds of gneiss rising through the soil, without any admixture of other rocks; but the gneiss is sometimes observed mixed with hornblende rock near the greater lakes.

The most fertile part of Upper Canada is the peninsula formed by the Huron, the Ottawa river, and Lakes Erie and Ontario. It rests chiefly on secondary limestone in nearly horizontal strata. Orthoceratites of several species, encrinites found without their heads and lateral branches, are very numerous in this limestone, with terebratulites, and a species of trilobite very like the *Calymene Blumenbachii*. Lamelliform corals, madrepores, turbinoleæ, and reteporæ, are very abundant.

A singular explosion in the earth took place about 1807 or 1808 in the township of Yonge, near the Thousand Islands; and a similar one was observed in 1821 near the head of the Missouri. The former proceeded from veins in a hillock of quartz. The quartz was shattered by the explosion, and a cavity twelve feet deep, as long, and nine feet wide, was formed, which contained crystals of sulphur and oxide of iron. In both instances the

explosions were attended with volumes of smoke and a strong sulphureous smell.

Lower Canada.—That portion of this vast territory which lies to the north of the Ottawa and the St Lawrence, consists chiefly of primary formations. It is bounded by that granitic chain which has been already noticed as passing in a south-westerly direction towards Lake Superior, and which divides the waters of the St Lawrence from the rivers falling into the sea of Hudson. Its general course runs about 230 miles from the St Lawrence. Its southern declivities are shrouded in trackless forests; but between it and that stream runs a much lower ridge, which skirts the river from the eastern extremity of Canada to Cape Tourment, about ten leagues below Quebec. The ridge then inclines to west-south-west, and terminates on the Ottawa, about 115 miles above its confluence with the St Lawrence. The tract between it and the river varies in breadth from thirteen to thirty miles, and is one of the finest and most picturesque districts in Canada, especially in its western portions. On the south side of the St Lawrence another range of hills of greywacke and clay slate commences on its banks, about 100 miles below Quebec, and proceeding to th south-west, passes that city about forty miles from the river. It continues in nearly the same direction to the small lake Memphramagog, where it enters the territory of the United States, and may be considered as the northern extremity of the great Appalachian chain. The region between this range and the St Lawrence is a fertile basin of secondary limestone and transition rocks. The surface is generally level. Its mineral riches are but little known. No important mines have yet been discovered. On the bay of St Paul a vein of lead, rather rich in silver, has been opened; but its produce has not been great.

New Brunswick.—The geology of this province has hitherto been little explored. The general features of the country are those of a low fertile district, in great part covered with fine timber, and watered by one navigable

river and numerous less considerable streams, which abound with sturgeon and the genus *salmo*. The part of the province contiguous to Nova Scotia consists of mountain limestone and new red sandstone. We do not know whether coal has hitherto been found in New Brunswick; but the vicinity of the coal formation of Nova Scotia renders this by no means improbable. The clay slate of the southern Canadian ridge extends into this province; but the greatest part of it is still an unexplored forest, though rapidly augmenting in wealth and population.

Nova Scotia.—The geology of this remarkable peninsula has been better detailed than that of any other part of British America,—first by Messrs Jackson and Alger, in the Memoirs of the American Academy, and afterwards by Mr Abraham Gesner, in a work published at Halifax in 1836.

Nova Scotia is about 380 miles in length by 100 in breadth. It is traversed in a direction from south-south-west to north-north-east, by three ranges of low hills, which, though usually dignified with the name of mountains, seldom attain an elevation of 500 feet above the sea. Along the southern coast extends the first range, composed of primary rocks, worn into numerous inlets, coves, and bays. The rocks are chiefly granite, gneiss, and mica slate. The granite has usually black mica, and the concretions are so large as sometimes to be raised in vast slabs of pure quartz. In the vicinity of Annapolis, it contains crystallized manganesian garnets; and fine specimens of rock crystal are common, especially on the river Paradise. Gneiss covers the granite on the flanks of the valleys, and is sometimes succeeded by mica slate, covered by a clay slate, which around Halifax has the characters of primary clay slate. This primary district extends from Cape Canseau on the north-east to Cape Sable on the south-west. It is deeply indented with creeks and bays, and presents a gloomy, steril aspect of rugged rocks, seldom rising into lofty precipices. The primary range does not, at

an average, extend, on the surface, above ten miles from the coast; but toward Cape Sable, in Shelburne county, this formation has a breadth of twenty or thirty miles. Granite and gneiss, however, crop out in various points through the newer formations, as we shall presently find.

Parallel to this district, and immediately reposing on its rocks, lies the clay slate formation. This is a very extensive formation, stretching almost the whole length of the province, except a small district along the Bay of St George, occupied by sandstone. It has a breadth varying from twenty to forty-five miles. This clay slate formation is connected with true greywacke, and sometimes contains *encrinites* and a species of *calymene;* showing that it should be considered as belonging to the Wernerian rocks of *transition*. For our own part, we consider the transition formations as but the oldest members of the *secondary* rocks; and without this admission the designation of *tertiary* is not perfectly appropriate to the strata found above the chalk; but if we consider the rocks of transition as a distinct class, the rocks superimposed on the chalk ought to be denominated *quaternary*. Encrinites and trilobites are in Europe confined to limestone, which has been generally considered as belonging to the mountain limestone, or to the oolitic series. But here they are found embedded in the greywacke slate.

The clay slate district presents ridges of granite and other primary rocks, in various parts of the country, especially north of Halifax, and in the districts of Annapolis and Pictou. It is in both these districts that the rich beds of iron ore are found for which Nova Scotia has long been remarkable. These beds of iron glance and brown iron ore crop out at the surface, and seem to extend through the northern part of the clay slate formation. The iron ore of Pictou is red, and brown iron ore; that of Nictau is a magnetic iron. This ore has the same direction as the slate, that is, from south-west to north-east, and is considerably inclined. It contains the same fossils as the slate; viz. anomites, terebratulites, cardites, encrinites, and trilobites. The

trilobites, we have seen, are very similar to *Calymene Blumenbachii*, which is so common in the island of Gothland, in the Baltic. The identity of direction and of organic remains have induced several geologists to consider the iron ore of St Clements, Nictau, and Pictou as portions of the same bed; although the extreme distance of the points where it has been traced is 250 miles.

The iron ore has been wrought at three different places, but after some time again abandoned; perhaps from the great expense of labour and the quality of the iron: an ore with such abundance of organic remains is very probably contaminated with phosphoric acid, which renders iron brittle. At New Glasgow mines, in Pictou, a fine iron hæmatite occurs, in which crystals of aragonite and sulphate of baryta occur. At New Philadelphia, in the same district, veins of vitreous copper ore, from two to four inches in thickness, have been found. This copper ore is now wrought, and affords about 79 per cent. of copper. A lignite found near that place often exhibits crystals of carbonate of copper, and of red oxide of that metal.

The new red sandstone district is very extensive: it extends in a narrow track along the valley of Annapolis river, from the harbour of that town to a large arm of the sea termed the Basin of Mines. At the southern angle of that bay it suddenly turns eastward to beyond Windsor, passes parallel with the south-east coast for about sixty miles, declines to the north-east, through Hants, Colchester, and Pictou, till it reaches the sea at Antigonish, and covers the whole of the province north of the line just now indicated, extending into the adjacent province of New Brunswick. In this formation very important quarries of gypsum and limestone are distributed, particularly around the Basin of Mines. These valuable minerals mark the formation to which the sandstone belongs. The gypsum is often on the surface; at other times it occurs on the banks of streams, and shores of the basin in beds in the sandstone; on the banks of the Shubenacadie it is very abun-

dant; and on the St Croix River it forms an elevated ridge several miles in length. It abounds in those circular cavities often found in gypsum. Hitherto no fossil salt has been discovered in Nova Scotia, though these rocks evidently belong to the formation of which that substance is a member; but salt springs occur near Antigonish, on the coast of Northumberland Strait. The gypsum is extensively worked, and exported to the United States, where it is used as a manure. This substance is found to be well suited for meliorating the soil in that country, and is sent off in immense quantity for that purpose.

The gypsum is accompanied by subordinate beds of floëtz limestone, which is also economically employed. Extensive beds of rich marl are found, and are employed in agriculture; but the importance of these substances seems yet scarcely appreciated by the colonists. The gypsum, marl, and limestone are chiefly found on the south-east side of the Basin of Mines. They are either wanting or scarce in the valley of Annapolis and King's County, as also toward the northern side of Pictou. But to compensate for this deficiency in the latter, coal-fields commence, and are numerous and rich on the north side of the Basin of Mines, from Merigomish, southward of Pictou, through the whole of Cumberland county.

The order of superimposition of rocks observable throughout Nova Scotia is granite, gneiss, mica slate, greywacke slate, a limited deposit of *old* red sandstone or greywacke; then succeeds the mountain limestone, on which are deposited the coal formation; and, finally, the new red sandstone and its beds of gypsum. The coal measures appear to form considerable troughs or distinct fields in the older rocks. The coal strata vary in thickness from two inches to thirty feet. At the Albion Mines there are ten strata of coal, the main seam of which has a thickness of twenty-four feet of good coal.

The coal-fields are often traversed by trap dykes, and

sometimes open fissures of vast depth are said to occur in them. The dykes occasion faults and slips as in other localities.

In the new sandstone and in the coal beds lepidendra are frequent, and, in the former, petrifactions of coniferæ have occurred.

There has not yet been any unequivocal proof of tertiary beds traced in Nova Scotia; but there is a very singular line of trap formation running on the south-east side of the Bay of Fundy in one uninterrupted chain from the Basin of Mines to Brier Island, a distance of 130 miles, with a mean breadth of six miles. It is cut at three points by Grand Passage, Petit Passage, and Annapolis Gut; but the whole seems to be one vast mass of trap superimposed on the sandstone, through the strata of which it has risen during some mighty geological convulsion. Nothing can exceed the magnificence of the bold and wave-worn trap cliffs along this interesting coast. We would particularly direct the traveller's attention to the grand detached needles of Cape Split, to the south side of Partridge Island at the entrance into the Basin of Mines, to the stupendous precipices which flank the entrance to the harbour of Annapolis, and also to the trap cliffs of Cape d'Or, which have an altitude of 400 feet. The trap is, generally speaking, a greenstone amygdaloid or a trap tuffa, often containing beautiful specimens of analcime, mesotype, stilbite, albite, laumonite, chabasite, heulandite, thomsonite, hornblende, and chalcedony. The rocks at Partridge Island, along with albite, afford good specimens of yellow opal and crystals of apatite. At Sandy Cove the trap often contains beautiful specular iron, hardly inferior to the ore of Elba; and very pure amethysts occur in other localities in this rock. On the eastern side of Cape d'Or the cavities of the amygdaloid are often filled with beautiful translucent crystals of analcime, or with delicate intermixtures of crystals of stilbite and calc spar.

The trap of Brier Island assumes a columnar form,

and approaches to the nature of basalt. Trap rock occurs also on the opposite side of the entrance into the Basin of Mines opposite to Cape Blomidon.

It is impossible not to be struck with the similarity between this part of Nova Scotia and the trap of the Faroe Islands, both in the magnificence of the cliffs and the individual minerals contained in the trap.

Detritus and travelled blocks of granite are found over many parts of the peninsula.

Cape Breton is a valuable island about 100 miles in length by 50 in breadth. Its surface is undulated with low hills, and it is nearly divided into two islands by a remarkable gulf or arm of the sea of a very irregular figure. It appears, from the imperfect accounts we have of its geology, to consist chiefly of the new red sandstone and coal formation. Its coal strata are not inferior in quality and thickness to those of Nova Scotia, and they have the advantage of almost reaching the surface. A principal bed of fine coal lies only eight feet below the mossy soil, and the quantity is enormous which might be raised at a small expense. Besides the usual fossils of coal districts, ferns and lepidendra, many fossil animal remains occur in this island. According to Mr Haliburton, the remains of extinct mammifera occur in Cape Breton; among which he describes an enormous skull which evidently belonged to a fossil species of elephant,—a circumstance which ought to excite no surprise when we reflect on the vast collections of their bones in Siberia and Behring's Straits.

St John or Prince Edward Island is of an extremely irregular figure, extending along the north coast of Nova Scotia and New Brunswick from east to west, about 135 miles in length, with a mean breadth of twenty miles, but between Richmond and Halifax bays it is not above three miles broad. The coasts are much indented. It has a rather flat surface and a fertile soil. Its mineralogy has been very little explored. The prevailing rock is the new red sandstone, which forms the contiguous provinces. But it is

without the gypsum, the coal-fields, or the iron mines, which form such important productions in Nova Scotia and Cape Breton.

Newfoundland is an immense island, 380 miles in length by about 160 in mean breadth, chiefly valuable on account of the prolific swarms of cod-fish on its rocky coasts. From the meeting of northern aerial currents with the warmer air impending over the waters of the Gulf Stream, it is the chosen region of fogs. The coasts frequented by Europeans, and the interior explored by the journeys of Mr Cormack (Edin. Phil. Jour. vols x. xviii.), would seem to present the same rock formations as Nova Scotia,—granite, gneiss, mica slate, and quartz rock, overlaid by limestone and the coal formation. Beautiful serpentine occurs in the centre of the island. The coal formation is on the western coast; and the saliferous strata are indicated by gypsum, red marl, and numerous salt-springs in the vicinity of North Barrasway River, a little to the north of the coal-fields. The coal is of a good quality. The soil in general may be represented as barren, fertility being in a great measure confined to the coasts. The interior is much intersected by swamps and lakes, or shrouded in unexplored forests of dwarf pine and birch, which are however confined to the plains and valleys. The western portion of the island, which is mountainous, is rugged and naked, except in the sheltered bays. But those hills scarcely form chains, and do not attain any considerable elevation. The eastern districts are low, sometimes picturesque, from the intermixture of rock, wood, and water; and this division of the island is traversed from north to south by successive ridges of low rocky hills.

APPENDIX.

NARRATIVE

OF THE

EXPEDITION OF MESSRS DEASE AND SIMPSON ALONG THE NORTH COAST OF AMERICA, UNDER THE EMPLOYMENT OF THE HUDSON'S BAY COMPANY.

[EXTRACTED FROM MINUTES OF COUNCIL, 1836.]

THE delineation of the unexplored portions of the Arctic Coast, westward of Mackenzie's River, and eastward of Point Turnagain, being an object that has for a long time excited the most lively interest in the public mind, and has called forth the energies of many enterprising and scientific men, whose exertions have nevertheless been unsuccessful, it is

Resolved, 79. That an expedition be fitted out for that purpose by the Honourable Hudson's Bay Company, to consist of C. F. P. W. Dease and Mr Thomas Simpson, with a party of twelve men, and that they be provided with such craft, provisions, or other supplies as may be required to accomplish that desirable object, agreeably to the plan submitted by those gentlemen to the council.

Resolved, 80. That the gentlemen in charge of the districts and posts of Athabasca and Mackenzie's River comply with any demands whatsoever connected with their respective charges that may be made upon them by C. F. Dease, or, in his absence, by Mr Thomas Simpson.

Copy of Letter from Governor Simpson to Messrs C. W. Dease and Thomas Simpson.

Norway House, 2d July 1836.

Gentlemen,—By the 79th and 80th resolutions of Council of this season, copies of which are annexed, you will observe that we have determined on fitting out an expedition forthwith, for the purpose of endeavouring to complete the survey of the northern shores of this continent.

2. This object has, for a great length of time, excited the most lively interest in the public mind, and has baffled the exertions of many enterprising men, among whom the names of Parry, Franklin, Ross, and Back, have of late years appeared conspicuous; but I trust that the honour of its accomplishment is reserved for the Hudson's Bay Company, through your exertions; and in selecting you for so important a mission, we give the best proof of the high opinion we entertain of your abilities and qualifications for such an undertaking.

3. The expedition, consisting of twelve men, is now placed under your direction, and you will be pleased to conduct it without delay to the Athabasca country, and to pass the ensuing winter at Fort Chipewyan, or Great Slave Lake, as you may consider expedient; although, in my opinion, Great Slave Lake would be the preferable winter ground, in many respects, as regards the objects of the expedition.

4. At the opening of the navigation in June, you will proceed by boat down Mackenzie's River to Fort Norman, and there leave four men, with directions that they proceed from thence to the north-east end of Great Bear Lake, and there erect buildings, establish fisheries, and collect provisions for the accommodation and maintenance of the party during the winter 1837-1838.

5. You will there go down to the sea with the remaining eight men, and endeavour to trace the coast to the westward to longitude 156° 21″ (N. latitude 71° 23′ 39″), whence Captain Beechey's barge returned. Should your progress along the coast be obstructed by ice or fog, as Sir John Franklin's was, you will either put the boat in a place of security, and proceed on foot with all your party, or leave four men with the boat for its protection, while you go along shore, carrying a sufficient quantity of provisions with you for the journey. It is desirable to take observations as frequently and to survey the country as accurately as possible, without,

however, losing time on your outward journey, in waiting for the appearance of the sun, moon, or stars, which are frequently obscured by the dense fogs that prevail so much on that coast, but devoting as much time to these objects as the season and the state of your provisions will admit on your return.

6. At the most westerly point you may reach, you will erect, in a conspicuous situation, a pillar or mound, and leave deposited in the earth, at its base, a bottle hermetically sealed, containing an outline of the leading circumstances connected with the voyage.

7. In suggesting that the boat should be left in the event of your progress being obstructed by ice or fog, I beg it to be understood that that ought not to be done, if there be the least probability that by perseverance you may succeed in getting her along shore, as the preservation of the boat I consider to be highly essential both to the accomplishment of the voyage and to the protection of the party; but if there be no possibility of getting on with the boat, I beg to recommend that you provide yourselves with axes and cordage, to make rafts for crossing rivers, and some parchment, sheeting, and oil-cloths, to make a couple of small canoes for the conveyance of the party, should it be found impossible to cross the rivers on rafts, and in order to secure your retreat in the event of the loss of the boat.

8. Should you not be able to accomplish the voyage or journey during the season of open water, and that you fall in with friendly Esquimaux or Indians, as many of the party as can be maintained may remain with them so as to complete the survey in the course of the winter or spring; in this, however, you will exercise your own discretion, and be guided by circumstances.

9. It is exceedingly desirable, however, that you should return by open water, so as to pass the winter at the establishment to be formed at the north-east end of Great Bear Lake, in order to make the necessary preparations for another voyage of discovery to the eastward, at the opening of the navigation in summer 1838.

10. The object of that voyage is to trace the coast from Franklin's Point Turnagain, eastward to the entrance of Back's Great Fish River; to that end you will haul your boat across from the north-eastern extremity of Great Bear Lake to Coppermine River before the winter breaks up, and at the opening of the navigation proceed to the sea, and make

as accurate a survey of the coast as possible, touching at Point Turnagain, and proceeding to Back's Great Fish River, if the strait or passage exists which that officer represents as separating the mainland from Ross's Boothia Felix; but should it turn out on examination that no such strait exists, and that Captain Ross is correct in his statement that it is a peninsula, not an island, you will in that case leave your boat and cross the isthmus on foot, taking with you materials for building two small canoes, by which you may follow the coast to Point Richardson, Point Maconochie, or some other given spot that can be ascertained as having been reached by Captain Back; and you will be regulated in determining whether you will return by Great Fish River or by the coast, by the period of the season at which you may arrive there, the state of the navigation, and other circumstances.

11. In order to guard against privation in the event of your returning by Great Fish River, it will be advisable to make arrangements at Great Slave Lake that a supply of provisions, with ammunition and fishing-tackle, likewise *babiche* for snow shoe lacing, be deposited at Lake Beechey, or some other point of that route.

12. Should you be unable to complete the voyage to the eastward from Coppermine River in one season, you may, as suggested in reference to the other voyage, take up your quarters with the Esquimaux for the winter, so as to accomplish it the following season.

13. In making your arrangements for both voyages, I have to recommend that a considerable quantity of pemmican and flour (not less than 100 pieces) be provided for voyaging provisions, and that you will be supplied with materials for constructing small canoes, leather for shoes, and snow shoe netting, likewise with ammunition, axes, crooked knives, fishing-hooks, net thread, backing and setting lines, and with warm clothing for yourselves and the people.

14. The necessary astronomical and surveying instruments are provided to enable you to take observations and to make surveys, in which you will be as accurate as possible; and you will be pleased to prepare a full and particular journal or narrative of the voyage, likewise a chart of the coast, and to take possession of the country, on behalf of Great Britain, in your own names, acting for the Honourable Hudson's Bay Company, at every part of the coast you may touch, giving names

to the different headlands, mountains, rivers, and other remarkable objects you may discover. It is also desirable that you make a collection of minerals, plants, or any specimens of natural history you may fall in with, that appear to be new, curious, and interesting.

15. You are hereby authorized to avail yourselves for the use of the expedition of any assistance whatsoever you may require, at any of the Honourable Company's establishments you may touch at, or have communication with, either by letter or otherwise, and the gentlemen in charge of these establishments are hereby instructed to meet all demands you may make upon them.

16. In the event of any accident occurring to prevent either of you from proceeding on this mission, the other will be pleased to follow up the object of it, and to avail himself of the assistance, as a second in command, of any clerk of the Company he may find within his reach, and such clerk will be pleased to act in that capacity accordingly.

With fervent prayers for your safety and success, I remain, gentlemen, your most obedient servant,

(Signed) GEORGE SIMPSON.

TO THE GOVERNOR AND COUNCIL OF THE NORTHERN DEPARTMENT, RUPERT'S LAND.

Fort Norman, Sept. 5, 1837.

GENTLEMEN,—We have now the honour to report the complete success of the expedition this summer to the westward of Mackenzie's River.

The preparatory arrangements were fully stated in our former despatches. On the 1st of June we quitted Fort Chipewyan with two small sea-boats, accompanied by a luggage-boat, and the hunters engaged for Great Bear Lake visited the Salt Plains, and arrived at the Great Slave Lake on the 10th, where we were detained by ice until the 21st. The same cause prolonged our passage across that inland sea, and having been for two days stopped by a strong contrary wind at the head of Mackenzie's River, it was the 1st of July when we reached Fort Norman. Our Indians cast up the following day, and the crews and cargoes were finally divided and arranged. Our boat-builder, John Ritch, received his instructions to proceed immediately with a fisherman, two other labourers, and the hunters, to Great Bear Lake, and at its north-eastern extre-

mity to erect our winter-quarters, and lay in a stock of provisions against our return from the coast. We then took our departure, and on the 4th reached Fort Good Hope. There we found an assemblage of Hare Indians and Loucheux. The latter informed us that three of their tribe had been killed and a fourth desperately wounded by the Esquimaux in the preceding month, which at once put an end to our intention of procuring an interpreter from among them, although several volunteered to accompany us in that capacity. They at the same time earnestly cautioned us to beware of the treacherous arts of their enemies. On the 9th of July we reached the ocean by the most westerly mouth of the Mackenzie, which Sir John Franklin sought for in vain. It is situated in latitude 68° 49′ 23″ N., longitude 136° 36′ 45″ W., and perfectly answers the description which the Esquimaux messengers gave of it to that officer when they came to apprize him of the intended attack by the Mountain Indians. We had not proceeded far to seaward when a party of nineteen men came off to us from Tent Island. We gave each of them a small present, —a practice which we continued throughout the voyage, and employed our vocabularies to the best of our ability and their utter astonishment, to explain the friendly feelings of the whites towards their tribe. Being a lively and communicative people, we in the course of the season acquired greater facility in our intercourse with them, and when words failed, we had recourse to signs, so that we seldom experienced much difficulty in making ourselves understood, or in comprehending their meaning. When indulged, however, they invariably became troublesome and daring, and they were ever on the outlook for plunder. On this first meeting they made several unsuccessful attempts in that way, and it was no easy matter to induce them to return to their camp after we had finished our business with them. They told us that they wished to accompany us to our encampment, where they would have soon been joined by fresh parties, and we had a shallow and dangerous navigation before us that night. We therefore peremptorily ordered them back; but it was not until we fired a ball over their heads that they veered round and paddled off. A storm soon after arose, but we made the land in safety the following morning at Shingle Point, latitude 69°, where we were detained until the 11th. The thermometer had already fallen to 48° of Fahrenheit, being 30° lower than on the evening we left the Mackenzie; and instead of the bright and beautiful weather

which we enjoyed in our descent of that noble stream, we were now doomed to travel in cold dense fogs, which enveloped us during nearly the whole of our progress along the coast. But though they perplexed and retarded, we never suffered them to arrest our course, nor did we ever, throughout the voyage, encamp but when compelled to do so by ice or contrary winds; and to this line of conduct may, under Providence, be ascribed the early and successful accomplishment of our undertaking. In the afternoon of the 11th of July we reached Point Kay, where we were detained by a compact body of ice occupying Phillips' Bay until the 14th. There we were visited by another party of Esquimaux, whose tents were pitched at no great distance from us. They inhabit the country bordering upon Babbage River, and informed us that, except when flooded by the melting of the mountain-snows, it is an insignificant stream, not fifty yards in breadth. Of this we had ocular proof in a clear day on our return. A handsome flora was collected in this neighbourhood, and some fine specimens of tertiary pitch coal. Having at length found a passage through the ice across Phillips' Bay, we reached Herschel Island the same evening (14th July), and had intercourse with other parties of the natives, who were pretty numerous along this part of the coast. We found on the island the skull of a whale eight feet in breadth: and whalebone is every where an article in extensive use among the natives, especially for the making of their nets and the fastenings of their sledges. We continued our route before an easterly wind along and through the ice with very little interruption, till 2 A. M. of the 17th, when an unbroken pack, extending to seaward, made us seek the shore in Camden Bay, near a considerable camp of Esquimaux. As soon as the fears of the latter were removed, an amicable meeting took place, and having made them the usual presents, we purchased a good many of their mouth ornaments, weapons, and water-proof boots, which last proved of great service in preserving the health of the party. These people informed us that they have two sources of trade: the first and most regular with their countrymen, who come annually from the westward; the other with the Mountain Indians, who carry fire-arms, and travel a great way across land from the direction of the Russian settlements. They showed us the knives, iron kettles, beads, and other things thus procured, which we have no doubt are of Russian manufacture. Their means of repayment appeared to us very limited, consisting in seal-skins,

whalebone, ivory, and a few inferior furs; viz. wolverenes, foxes, and musk-rats. A pair of indifferent beaver gloves was purchased from them, which they had probably procured from the Mountain Indians; for we saw no other symptom of the existence of that valuable animal near the coast, though it doubtless abounds at some distance up the large wooded rivers, which we subsequently discovered. In the afternoon there appeared a narrow lane of water stretching outwards, and we immediately embarked. We had advanced about three miles from the land, when the ice suddenly closed upon us before a strong north-east wind; one of the boats got squeezed, and it was only by throwing out the cargo upon the floating masses that she was saved from destruction. By means of portages made from one piece to another,—the oars serving as bridges,—the cargo was all recovered, and both boats finally hauled up on a large floe, where we passed an inclement and anxious night. Next morning the gale abated, the ice relaxed a little around us, and by a long circuit we regained the shore, about a league to the eastward of our former position. There we were detained till midnight of the 19th, when a favourable wind enabled us to round the body of ice at a distance of four miles from the land, and, continuing, carried us on the 20th into Foggy Island Bay. There we were stopped by the ice and a violent north-east wind until the 23d, having, on the preceding day, made an ineffectual attempt to weather Point Anxiety, in which we narrowly escaped with a thorough drenching. The latitude ashore was 70° 9′ 48″. From this situation we had the satisfaction of discovering, during a clear afternoon, a range of the Rocky Mountains to the westward of the Romanzoff chain, and not seen by Sir John Franklin; but being within the limit of his survey, we called it "the Franklin range," as a just tribute to his character and merits. On the 23d we again set sail, rounded the pack of ice which extended six miles to seaward from Yarborough Inlet, then abruptly turning in, we supped near Return Reef, and the survey commenced.

Return Reef is one of a chain of reefs and islets which run for twenty miles parallel to the coast, at the distance of about half a league, affording water enough within for such light craft as ours. The mainland is very low. From Point Berens to Cape Halkett (named after two members of the committee), it forms a great bay fifty miles wide, by a third of that depth, which, in honour of the deputy-governor, was named Harrison's Bay. At the bottom of this bay another pic-

turesque branch of the Rocky Mountain chain, the last seen by us, rears its lofty peaks above these flat shores: we called them Pelly's Mountains, in honour of the governor of the Company. At their base flows a large river, two miles broad at the mouth, which we named after Andrew Colville, Esq. This river freshens the water for many miles, and its alluvial deposits have rendered Harrison's Bay so shallow, that it was not till after a run of twenty-five hours, during which we had repeatedly to stand well out to sea, that we could effect a landing on a grounded iceberg, nine miles to the south-west of Cape Halkett. A north-east gale kept us there the whole of the following day. The country extending towards the mountains appeared to consist of plains covered with short grass and moss, the favourite pasture of the rein-deer, of which we saw numerous herds. Next morning (26th July) the tide rose nearly two feet, and enabled us safely to cross the shoals. At no great distance from our encampment we passed the mouth of another large river, one mile wide, whose banks were thickly lined with drift timber. We named it the Garry, in honour of Nicholas Garry, Esq. Cape Halkett forms the extreme point of a small island, separated from the main shore by a narrow channel too shallow for boats. Its situation was found by observation to be in latitude 70° 47′ 45″ N., longitude 151° 55′ 30″ W. It appears to be a place of resort to the Esquimaux; for we found a spot where they had been building their *baidars* last spring. We suppose them to have been part of a very large camp which we saw in the bay of Staines' River, as we sailed past the east end of Flaxman Island on the 20th July; that this camp was composed of the western traders of that tribe on their annual journey to meet their eastern brethren at Barter Island; and that we missed them on our return, because they were then dispersed along the rivers, lakes, and in the skirts of the mountains, hunting the rein-deer. From Cape Halkett the coast turned suddenly off to the W. N. W. It presented to the eye nothing but a succession of low banks of frozen mud. The ice was heavy all along, but there were narrow channels close to the shore; the soundings in these averaged one fathom on a sandy bottom. In the evening we passed the mouths of a considerable river, which was named after William Smith, Esq. From thence, for about nine miles, the coast line is formed of gravel reefs, near the extremity of which, at Point Pitt (called after another member of the committee), the land trends more to the westward. The ice

lay much closer here, and numerous sunken masses adhered to the bottom, which obliged us to search for a passage out from the shore. The night was dark and stormy, and we were in considerable danger: one of the rudders gave way; but we at length effected a landing on a floe near an immense rein-deer pound. This was ingeniously formed by the Esquimaux with double rows of turf erected on a ridge of ground that encloses a hollow terminating in a lake, into which the unsuspecting animals are driven and there speared. The vegetable soil in this vicinity was barely four inches in depth, beneath which the clay was frozen as hard as rock, so that our tent pickets could not be driven home. The men had to go a good mile to find a log or two of drift-wood for fuel, the scarcity of which essential article is doubtless the chief cause of the want of inhabitants along so great a portion of the coast. We were detained at this place till the following afternoon (27th), when the ice opening a little enabled us to resume our route. It blew a cutting blast from the north-east, and the spray froze upon the oars and rigging. Point Drew, called after Richard Drew, Esq., is the commencement of a bay of considerable size, but extremely shallow, and much encumbered with ice, in pushing through which the boats received several blows; and we had on this, as on many other occasions, good cause to admire their excellent workmanship. To seaward the ice was still smooth and solid as in the depth of a sunless winter. We named this bay after Chief Factor Smith, as a token of acknowledgment for his zealous and unwearied efforts to promote the interests of the expedition. At midnight we came in sight of a sharp projecting point, over which rose the peaks of some lofty icebergs that were at first mistaken for lodges of the natives. To this well-defined point we gave the name of Cape George Simpson as a mark of sincere respect for our able and worthy governor. It was destined to be the limit of our boat navigation; for during the four following days we could only advance as many miles. The weather was foggy and dismally cold, the wildfowl passed in long flights to the westward, and there seemed little prospect of our being able to reach Point Barrow by water. Boat Extreme is situated in latitude 71° 3′ 24″ N., longitude 154° 26′ 30″ W. Variation of the compass, 42° 36′ 18″ East.

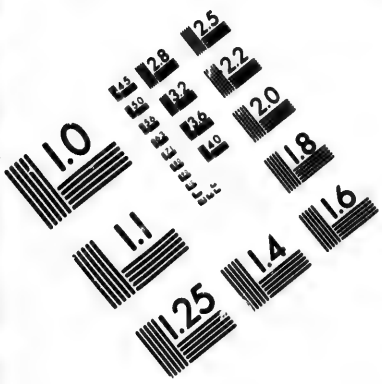
Under the above circumstances, Mr Thomas Simpson undertook to complete the journey on foot, and accordingly started on the 1st of August with a party of five men. They

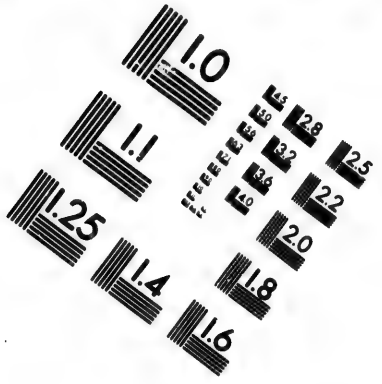
carried with them their arms, some ammunition, pemmican, a canvass canoe for the crossing of rivers, the necessary astronomical instruments, and a few trinkets for the natives. It was one of the worst days of the whole season, and the fog was so dense that the pedestrians were under the necessity of rigidly following the tortuous line of the coast, which for twenty miles formed a sort of irregular inland bay (being guarded without by a series of gravel reefs), the shore of which was almost on a level with the water, and intersected by innumerable salt creeks, through which they waded, besides three considerable rivers or inlets which they traversed in their portable canoe. They found at one place a great many large wooden sledges, joined with whalebone, and strongly shod with horn. Mr Simpson conjectures that these vehicles were left there by the western Esquimaux, already spoken of, on their eastward journey, to be resumed again on their return when winter sets in. The tracts of rein-deer were every where numerous. Next day the weather improved, and at noon the latitude 71° 9′ 45″ was observed. The land now inclined to the south-west, and continued very low, muddy, and, as on the preceding day, abounding in salt creeks, whose waters were at the freezing temperature. The party had proceeded about ten miles, when, to their dismay, the coast turned suddenly off to the southward, forming an inlet extending as far as the eye could reach. At the same moment they descried at no great distance a small camp of the western Esquimaux, to which they immediately directed their steps. The men were absent hunting, and the women and children took to their boat in the greatest alarm, leaving behind them an infirm man, who was in an agony of fear. A few words of friendship removed his apprehensions, and brought back the fugitives, who were equally surprised and delighted to behold white men. They set before the party fresh rein-deer meat and seal oil, and besought them for tobacco (tawaccah), of which men, women, and even children, are inordinately fond. Mr Simpson now determined to adopt a more expeditious mode of travelling, and demanded the loan of one of their oomiaks, or family canoes, to convey the party to Point Barrow, with which, from a chart drawn by the most intelligent of the women, it appeared that these people were acquainted. The request was joyfully complied with; four oars were fitted with lashings to this strange craft, and the ladies declared that our party were true Esquimaux and not "Kabloonan." Before starting, the hunters arrived, and were

likewise gratified with tobacco, awls, buttons, and other trifles. Dease's Inlet is five miles broad at this place, yet so low is the land that the one shore is just visible from the other in the clearest weather. It now again blew strongly from the north-east, bringing back the cold dense fog; but the traverse was effected by aid of the compass. The waves ran high and the skin-boat surmounted them with a buoyancy which far surpassed that of our boasted north canoes. The party encamped on the west side of the inlet. The banks there were of frozen mud, ten or twelve feet high; the country within was perfectly flat, abounded in small lakes, and produced a very short grass, but nowhere had the thaw penetrated more than two inches beneath the surface, while under water along the shore the bottom was still impenetrably frozen. Not a log of wood was to be found in this land of desolation; but our party followed the example of the natives, and made their fire of the roots of the dwarf-willow in a little chimney of turf. Next morning (August 3) the fog cleared for a while; but it was still bitterly cold, and the swell beat violently on the outside of a heavy line of ice which lay packed upon the shore. To weather this was a work of danger; but the good qualities of their boat, after a severe trial, carried them safely through. The land ran out for five miles to the northward, then turned off to the N.W., beyond which, at Point Christie, the latitude 71° 12′ 36″ was observed. From thence the coast trended more westerly for ten miles, forming two points and a bay, which Mr Simpson named after Chief Factors Charles and Rowand, and Chief Trader Ross. The party then came to what appeared a large bay, where they halted for two or three hours, to await the dispersion of the fog, not knowing which way to steer. In the evening their wish was gratified, and from that time the weather sensibly ameliorated. The bay was now ascertained to be only four miles in diameter. The depth half-way across was 1½ fathom on a bottom of sand; that of Dease's Inlet was afterwards found to be two fathoms, muddy bottom, being the greatest depth between Return Reef and Point Barrow, except at ten miles S. E. from Cape Halkett, where three fathoms were sounded on our return. After crossing Mackenzie's Bay, the coast again trended for eight or nine miles to the W. N.W. A compact body of ice extended all along and beyond the reach of vision to seaward; but the party carried their light vessel within that formidable barrier, and made their way through the narrow channels close to the shore. At midnight they passed

the mouth of a fine deep river, a quarter of a mile wide, to which Mr Simpson gave the name of the Bellevue, and in less than an hour afterwards the rising sun gratified him with the view of Point Barrow, stretching out to the W. N. W. They soon crossed Elson Bay (which, in the perfect calm, had acquired a tough coating of young ice), but had much difficulty in making their way through a broad and heavy pack that rested upon the shore. On reaching it, and seeing the ocean extending away to the southward, they hoisted their flag, and with three cheers took possession of their discoveries in his majesty's name.

Point Barrow is a long low spit, com[illegible] of gravel and coarse sand, which the pressure of the [illegible]ced up into numerous mounds, that, viewed from a[illegible]ssume the appearance of huge boulder rocks. At the [illegible]re the party landed it is only a quarter of a mile across, but is broader towards its termination. The first object that presented itself, on looking round the landing-place, was an immense cemetery. The bodies lay exposed in the most horrible and disgusting manner, and many of them appeared so fresh that the men became alarmed that the cholera, or some other dreadful disease, was raging among the natives. Two considerable camps of the latter stood at no great distance on the point, but none of the inmates ventured to approach, till our party first visited them, and, with the customary expressions of friendship, dissipated their apprehensions. A brisk traffic then began, after which the women formed a circle, and danced to a variety of airs, some of which were pleasing to the ear. The whole conduct of these people was friendly in the extreme. They seemed to be well acquainted with the character, if not the persons, of white men, were passionately fond of tobacco, and when any of the younger people were too forward, the seniors restrained them, using the French phrase "C'est assez!" which, like "tawaccah," they must have learned from the Russian traders. They designate the latter "Moonatagmun;" and a respectable-looking old man readily took charge of a letter addressed by Mr Simpson to them, or to any other whites on the western coast, containing a brief notice of the proceedings of the expedition. To the northward, enormous icebergs covered the ocean; but on the western side there was a fine open channel, which the Esquimaux assured the party extended all along to the southward; and so inviting was the prospect in that direction, that, had such been his object, Mr Simpson would not





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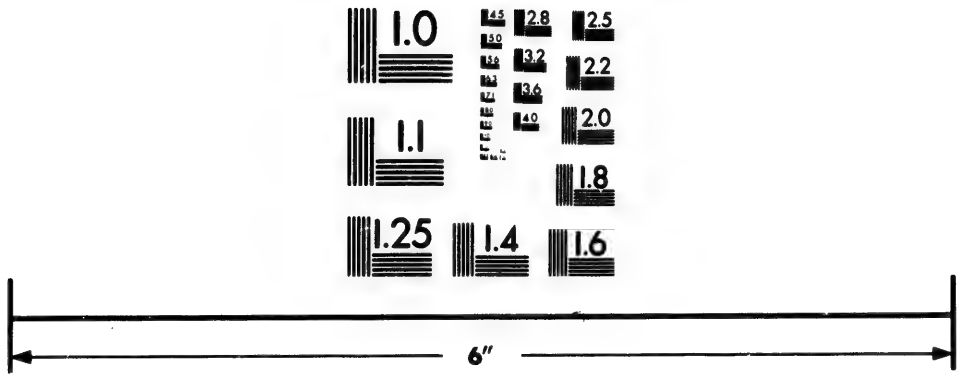

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have hesitated a moment to prosecute the voyage to Cook's Inlet in his skin-canoe. The natives informed him that whales were numerous to the northward of the point, and seals were every where sporting among the ice. These Esquimaux were well clothed in seal and rein-deer skins; the men all used mouth ornaments, and the "tonsure" on the crown of the head was universal among the men and boys. The women had their chins tattooed, but did not wear the lofty top-knots of hair which are fashionable to the eastward. They were very inquisitive about the names of our party, and equally communicative of their own. A number of their words were taken down, some of which are different from the corresponding terms in Sir Edward Parry's Journal, but the greater part are either the same or dissimilar only in the terminations. They lay their dead on the ground, with the heads all turned *to the north.* There was nothing else, either in their manners or habits, remarked as differing from the well-known characteristics of the tribe, except an ingenious and novel contrivance for capturing wildfowl: It consists of six small perforated ivory balls, attached separately to cords of sinew three feet long, the ends of which being tied together, an expanding sling is thus formed, which, dexterously thrown up at the birds as they fly past, entangles and brings them to the ground. Mr Simpson could not learn that there had been any unusual mortality among this part of the tribe, and is of opinion that the concourse of natives who frequent Point Barrow at different periods of the year, coupled with the coldness of the climate, sufficiently account for the numerous remains already noticed. It was high water between one and two o'clock, A.M. and P.M.; the rise of the tide was fourteen inches, and the flow came from the westward.

Observations were obtained which determine the position of the landing-place to be in latitude 71° 23′ 33″ N., longitude 156° 20′ 0″ W., agreeing closely with the observations of Mr Elson. Then bidding adieu to their good-humoured and admiring entertainers the party set out on their return. They were arrested that evening by the ice, but next morning (August 5) it opened and allowed them to proceed. At a late hour they reached the camp of the Esquimaux in Dease's Inlet, and after liberally recompensing them for the use of their valuable canoe, directed some of the men to follow to Boat Extreme, where it would be left for them. Then continuing their route all night, at 5 A.M. on the 6th the party rejoined the main body of the expedition.

We commenced our return the same afternoon, and being favoured by a light wind and an almost clear sea, we sailed all night, and next day (August 7) at noon reached Cape Halkett. We then stood across Harrison's Bay: the wind increasing to a gale, we shipped much water, but persevering, under triple-reefed sails, at 3 P. M. of the 8th we landed safely at Thawn River, within view of the point where our survey began. The position of this encampment was ascertained by good observations to be in latitude 70° 25′ 3″ N.; longitude 148° 24′ 45″ W. The gale having moderated, we re-embarked the following afternoon, and running without intermission before a fresh breeze we reached Demarcation Point to breakfast on the 11th. Several showers of snow fell during this run, and it was piercingly cold. The Romanzoff and British Mountains had assumed the early livery of another winter. The ice in Camden Bay was still very heavy; but it protected us from the dangerous swell to which we became exposed after passing Barter Island. Soon after leaving Demarcation Point the ice became so closely wedged that we could no longer pursue our way through it. The following day (August 12th) it opened a little, and the weather becoming fine, we put out and advanced for a few hours, when the mountainous swell and heavy ice obliged us again to seek the shore, which we with difficulty reached, between Backhouse River and Mount Conybeare. There we were detained until the 15th. The icebergs which begirt the coast were of great size and of the most fantastic shapes; but from the summit of a hill six miles inland we enjoyed an unbounded prospect of the blue ocean stretching to the north. The pasture in the deep hollows among the mountains was luxuriant, herds of rein-deer were browsing in those rich valleys, and we procured some venison. In the night of the 14th, the stars and aurora borealis were first visible. The following morning we resumed our route, and the weather continuing nearly calm, we reached the western mouth of the Mackenzie on the 17th, and there encamped. The first Esquimaux seen, during our return from Boat Extreme, were at Beaufort Bay; but from thence to the vicinity of the Mackenzie we were continually falling in with small parties, many of whom we had seen on the outward voyage. We maintained a friendly intercourse with them all, and they were very anxious to know whether we intended soon to visit them again. The habitations on Tent Island were abandoned, in consequence, we understood, of an alarm that the

Loucheux meditated a descent to revenge the murder of their friends.

We have but few general remarks to add to the foregoing narrative. The tides all along the coast were semidiurnal, the flow coming from the westward. The rise however was strongly affected by the winds and ice, and our opportunities of observing were but few. At Boat Extreme the average rise was fifteen inches; high water from 1 to 2 o'clock, A.M. and P.M. The rise generally decreased to the eastward, and at Point Kay it was only eight or nine inches. That the main sea is clear and navigable by ships during the summer months the long rolling swell we encountered on our return and the view obtained from the mountains furnish tolerable proof. We likewise saw some whales on our return. The prevalence of east and north-east winds during the early part of the summer is a remarkable fact. We were indeed favoured by a westerly wind for five days on our return, but this was almost the only exception: At a more advanced period of the season, however, the winds blew more from the west and north-west. It is now certain that from Kotzebue's Sound to Cape Parry there is not a harbour into which a ship can safely enter; but it must be a very unpropitious season that would not admit of achieving that portion of the Arctic navigation, and another year ought certainly to suffice for the remainder, whether the voyage were undertaken from Barrow's or from Behring's Straits. On this subject, however, we shall be better able to offer an opinion if successful in our next summer's operations. The natural history of the coast, from Return Reef to Point Barrow, is meagre in the extreme. In the botanical kingdom scarcely a flower or moss was obtained in addition to the collection made on other parts of the coast. In zoology, rein-deer, Arctic [illegible], one or two lemmings, seals, white owls, snow buntings, w[illegible] partridges, and some well known species of waterfowl were the only objects met with: while in the mineralogical department there was not a rock *in sitú* or boulder stone found along an extent of more than 200 miles of coast. The variation of the compass was found to have increased from one to three degrees, at the corresponding points, where observations had been made by Sir John Franklin. At Boat Extreme, on the other hand, it was only twenty-one minutes greater than that stated by Mr Elson at Point Barrow, where, by continuing the proportion, the quantities would coincide. The moon was never once visible during the whole outward and homeward voyage, till our re-

turn to the western mouth of the Mackenzie, where a set of distances was obtained, and the longitudes of the other points reduced back from thence, by means of a very valuable watch generously lent to the expedition by Chief Factor Smith. The map of our discoveries will be prepared and forwarded to you in the spring.

Our ascent of the Mackenzie has not been characterized by any circumstances of particular interest. The weather continued calm and beautiful; and the journey was performed entirely by towing, in which manner we advanced at the rate of from thirty to forty miles a-day. The river has fallen very low, and the fisheries have in consequence been unproductive, causing a scarcity of provisions, both at Fort Good Hope and among the natives. We saw a good many of the Loucheux, but the Hare Indians were all dispersed in the interior searching for subsistence. From the coast up to Point Separation moose-deer were numerous, being quite undisturbed; but from our first falling in with the Loucheux no vestiges of either moose or rein deer have been seen. We reached this place yesterday with half our summer stock of provisions still to the fore, and are now awaiting with impatience the arrival of our outfit and despatches.

Some Indians from Great Bear Lake have brought us intelligence of the party sent to establish our winter-quarters. They were stopped in Bear Lake River by the ice, during the whole month of July, lost one of their canoes, and it was not till about the 6th ultimo that they passed Fort Franklin, after which they had the prospect of an unimpeded passage across the lake. The continued easterly winds were the cause of this vexatious detention, during which the Dog-ribs kindly supported our people with the produce of their nets.

8th September.

We have now the honour to acknowledge receipt of Governor Simpson's letter, dated London, 11th November last, and feel gratified by the interest which the governor and committee have manifested in the expedition and those engaged therein.

We have duly received the journals of Captain Back's late expedition, and are glad to find that his new undertaking is in no way to interfere with our original instructions.

You may rest assured that our efforts in the cause of discovery and science next summer to the eastward of the Copper-

mine River will not be less zealous than they have this season been in another field, and we are sanguine in the hope that they will be crowned with equal success.

Our supplies for next season have come to hand. They were delivered in very indifferent order at Portage la Loche, and there was a great deficiency in the weights of the pemmican; but with the quantity saved of this year's stock there will be provisions enough for next summer's operations, and we have no further demands to make upon the depot for goods.

We send two men express to Great Slave Lake with this despatch, and to meet the spring packet, the non-arrival of which causes us some anxiety; and to-morrow we take our departure for winter-quarters.

With the utmost respect and regard,
We have the honour to be,
Gentlemen,
Your most obedient and humble servants,
(Signed) PETER WILLIAM DEASE,
THOMAS SIMPSON.

EXPEDITION OF 1838.

As this work was about to close, intelligence arrived of the result of the expedition of 1838. From the narrative of Messrs Dease and Simpson, it appears that they spent a very severe winter, being even threatened with famine. On the 20th June they reached the Coppermine River, descended all its "terrible rapids," and on the 1st July pitched their tents on the shores of the Arctic Ocean. They were detained seventeen days by ice, and even after commencing their voyage had an incessant struggle against that obstinate foe, which obliged them to make a circuit of 140 miles by Arctic Sound. Hence, it was the 15th August before they doubled Cape Flinders, and in a little bay, three miles south of Franklin's farthest encampment, the boats were completely arrested. Mr Simpson, however, undertook on foot an exploratory expedition of ten days. The coast for a considerable space extended north-east, and opposite there appeared, first, an archipelago of islands, then a long range of land, which they named Victoria, but dreaded that it might join the continent and form an enclosed bay. It terminated, however, in a lofty cape, on the other side of which the ocean was seen

extending beyond the reach of vision, overspread with islands of various size and shape. He proceeded onward till he came to the entrance of a deep bay, when, his time being spent, he determined to return. He had explored 100 miles of coast, and had seen thirty miles farther.

We now give Mr Simpson's letter in full, being the only part which relates to actual discovery:

"On the 20th of August, the day appointed for the return of former expeditions from those desolate shores, I left our boats still hopelessly beset with ice, to perform a ten days' journey of discovery on foot to the eastward. My companions were five servants and two Indians. We carried a wooden-framed canvass canoe, and nearly the same other baggage as on the journey to Point Barrow last year, with the addition of a tent for the nightly shelter of the whole party on a coast almost destitute of fuel. Each man's load at starting weighed about half a cwt., and our daily progress averaged twenty geographical miles. About the middle of the first day's journey we passed the farthest point to which Sir John Franklin and his officers walked in 1821. Beyond that the coast presented its N.N.E. trending to our encampment of the same night, situated on the pitch of a low cape, which I have named Cape Franklin. From west to north-east a new land, or crowded chain of islands of great extent,—in many places high and covered with snow,—stretched along at the distance of thirty miles, and led to the apprehension that we were entering a deep sound or inlet. The main land now turned off to E. N. E., which continued to be nearly its general bearing for the three following days. It is flat in its outline, our path leading alternately over soft sand, sharp stones, and swampy ground. At the distance of from one to two miles the coast is skirted by a range of low stony hills, partially clothed with dull verdure, which send down to the sea numberless brooks and small streams; none of the latter at that season reached above our waists, though the deep and rugged channels of many of them showed that in the spring they must be powerful torrents. Two leagues inland, a hill (which I have named Mount George, after Governor Simpson) rises to the height of 600 feet, and forms a conspicuous object for a day's journey on either side. The ice all along lay immovably aground upon the shallow beach, and extended in every direction as far as the eye could reach. The great northern land still stretched out before us, and kept alive doubts of our being engaged in exploring an immense bay,

which even the increase in the tides, the quantity of seaweed and shells, and the discovery of the remains of a large whale and of a polar bear could not altogether dispel. These doubts seemed almost converted into certainty as we drew near, on the fourth evening, an elevated cape, and saw land apparently all around. With feelings of bitter disappointment I ascended the height, from whose summit a splendid and most unlooked for view suddenly burst upon me. The ocean, as if transformed by enchantment, rolled its free waves beneath and beyond the reach of vision to the eastward, islands of various shape and size overspread its surface, and the northern land terminated in a bold and lofty cape, bearing north-east at least forty miles distant, while the coast of the continent trended away to the south-east. I stood, in fact, on a remarkable headland at the eastern entrance of an ice-obstructed strait. The extensive land to the northward I have called "Victoria Land," in honour of our youthful sovereign; and its eastern extremity Cape Pelly, after the governor of the honourable company. To the promontory, where we encamped, I have attached the name of Cape Alexander, after an only brother, who would give his right hand to be the sharer of my journeys. The rise and fall of the tide there was about three feet, being the greatest observed by us in the Arctic Seas. The coast here changes its character, the water becomes deep, the approach easy, and I have little doubt that the islands contain secure harbours for shipping.

"Next morning, at the distance of eight or nine miles, we crossed another high cape, formed of trap rocks, in lat. 68° 52′ 18.5″ N., the variation of the compass being 63° E. The travelling had become more and more toilsome; our road now passing over some miles of round loose stones, and then through wet mossy tracts, strewn with large boulders, and tangled with dwarf willows. At our usual camping hour, we opened a large bay studded with islands, which ran in for five miles to the S. S.W., and then turned off in a bold sweep of rounded granitic hills (like those near Melville Sound and Cape Barrow), dipping to the sight in the E. S. E., at the distance of thirty miles. To walk round even the portion of the bay in view would have consumed three days: the time allotted for outgoing was already expired, and two or three of my men were severely lame from the fatigue of their burdens, the inequalities of the ground, and the constant immersion in icy cold water. I besides cherished hopes, that by making the best of our way back, we

might, agreeably to my arrangement with Mr Dease, meet him bringing on one of the boats, in which case, with an open sea before us, we could have still considerably extended our discoveries before the commencement of winter. I may here remark, that we were singularly fortunate in the five days of our outward journey, the weather being so moderate and clear, that I daily obtained astronomical observations, whereas before our departure from the boats, and during our return to them, we had continued storms, with frost, snow, rain, and fog. Close to our farthest encampment appeared the site of three Esquimaux tents of the preceding year, with a little stone chimney apart. We passed the remains of a larger camp, and several human skeletons, near Cape Franklin, but nowhere throughout the journey did we find recent traces of that few and scattered people.

"The morning of the 25th of August was devoted to the determination of our position, and the erection of a pillar of stones on the most elevated part of the point. After which, I took possession of the country, with the usual ceremonial, in the name of the Honourable Company, and for the Queen of Great Britain. In the pillar I deposited a brief sketch of our proceedings, for the information of whoever might find it. Its situation is in lat. 68° 43′ 39″ N., long. (reduced by Captain Smith's watch from excellent lunars at the boats,) 106° 3′ W., the magnetic variation being 60° 38′ 23″ E. The compass grew sluggish and uncertain in its movements as we advanced eastward, and frequently had to be shaken before it would traverse at all. Two miles to the southward of our encampment, a rapid river of some magnitude discharges itself into the bay, the shores of which seemed more broken and indented than those along which we had travelled. Independently of Victoria Land, and an archipelago of islands, I have had the satisfaction of tracing fully one hundred miles of coast, and of seeing thirty miles further, making in all, after deducting Franklin's half-day's journey already mentioned, about 120 miles of continental discovery. This is in itself important, yet I value it chiefly for having disclosed an open sea to the eastward, and for suggesting a new route along the southern shores of Victoria Land, by which that open sea may be attained, while the main land (as was the case this season) is yet environed by an impenetrable barrier of ice. Whether the open sea to the eastward may lead to Ross's Pillar, or to the estuary of Back's Great Fish River, it is hard to conjecture, though the trending

of the most distant land in view should rather seem to favour the latter conclusion.

"The same evening, on our return, we met the ice at Trap Cape, driving rapidly to the eastward. As we proceeded, the shores continued inaccessible, but open water was now every where visible in the offing. Several bands of buck rein-deer were migrating to the southward along the hills; two which we shot were in far superior condition to those in Bathurst's Inlet and near the Coppermine. A few musk-oxen were also seen; and numerous flocks of white geese (*Anser hyperboreus*), generally officered by large gray ones (*A. Canadensis*), were assembled on the marshes, and taking their aerial flights to more genial climates. At dusk, on the 29th of August, our tenth day, we regained the boats, and found them still enclosed in the ice, which the north and westerly gales seemed to have accumulated from far and near, towards Point Turnagain.

(Signed) "THOMAS SIMPSON."

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THE END.

Printed by Oliver & Boyd,
Tweeddale Court, High Street, Edinburgh.

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